Contents
Active Components

A.12 Unmanaged Industrial Ethernet Switches

A.13 IES10 Series Entry-Level
A.14 IES20 Series
A.16 IES40 Series Full Gigabit
A.18 IEM Media Converter

A.20 Managed Industrial Ethernet Switches

A.24 IES21 Series
A.26 IES31 Series Gigabit Uplink
A.28 IES41 Series Full Gigabit
A.30 IES1000 19" Rack Simple Rack Switch
A.32 IEMS2000 19" Rack Gigabit Modular Layer 2
A.34 IEMS2000T 19" Rack Gigabit Modular with PTP

A.36 Industrial Routers Including 3G

A.37 Din Rail Gigabit WAN/LAN Router with 3G
A.38 IEMS3000 19" Rack Gigabit Modular Layer 3
A.40 IEMS3000T 19" Rack Gigabit Modular with PTP

A.42 PoE / SL / WL Series

A.42 PoE Switch (Power over Ethernet)
A.43 SL-COM 1 / SL-COM 2
A.44 SL-MOD-GW
A.45 WL-EM 900MHz FHSS Radio
A.46 WL-EM 2.4GHz + WL-EM 5.8GHz FHSS Radio
A.47 WL Expansion I/O Modules
A.47 WL-TXRX 900MHz FHSS Radio
A.48 Antenna Accessories

B.1 For Passive Products see page B.1

B.6 Din Rail Coupler for the copper and fibre
B.13 Patch Cables for copper and fibre
B.19 IP67 plugs and sockets
B.20 Front panel connectors

Industrial Ethernet Basics

Over the past thirty years, Ethernet has become a standard network technology in the office as well as in information technology areas. The compatibility of Ethernet products from different manufacturers helped this advance. Ethernet offers increasing performance at lower and lower prices allowing for increased growth and market share. A brief outline of the history of Ethernet is shown below.

1980	10 Mbps DIX Ethernet 1.0 protocol
1982	IEEE 802.3 Ethernet protocol
1986	10BASE-T
1995	100BASE-T Fast Ethernet
1998	1000BASE-LX/SX/CX
1999	1000BASE-T
2006	10 Gigabit Ethernet
2010	100 Gigabit Ethernet

Early industrial data communications standardisation was attempted by using field bus technology. However, the variety of protocols and standards make communication between different field bus systems very complex and inconvenient for users.

Compared to field bus technology, the following advantages of Ethernet have caught people's eye.

- Open protocol

Ethernet is an open and transparent network protocol making communication between devices from different manufacturers very easy.

- High transmission rate

Rates of 10 Mbit/s, 100 Mbit/s and 1000 Mbit/s have been widely adopted to meet the ever growing bandwidth requirements.

- Full duplex operation

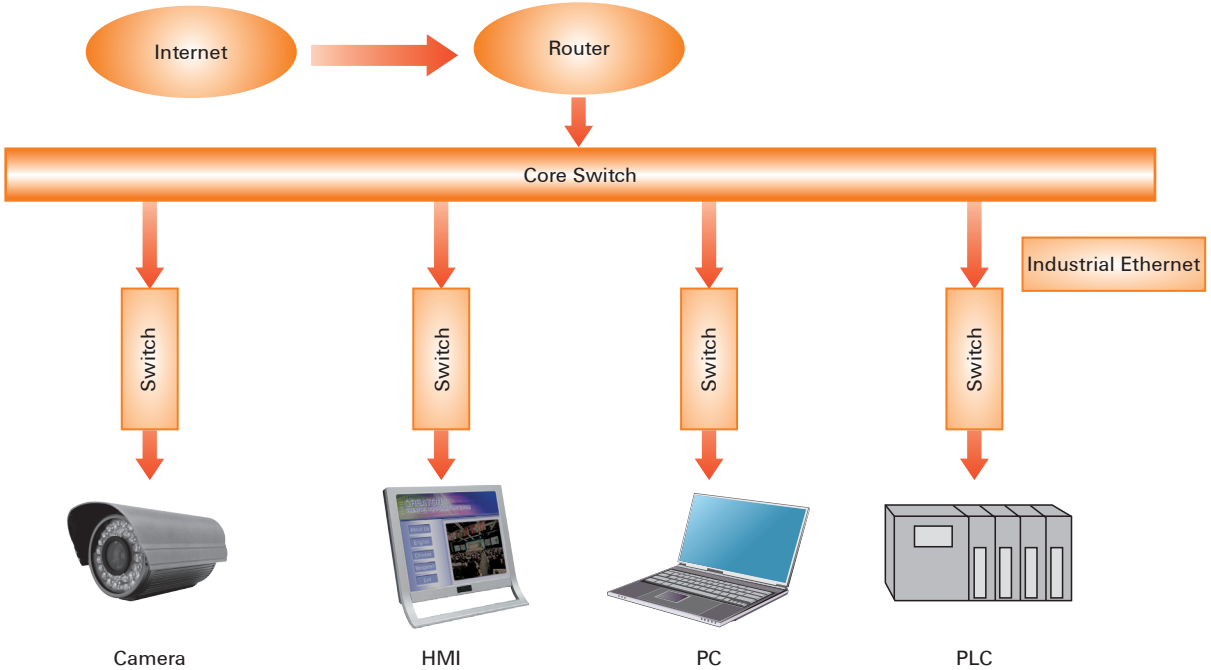
In Ethernet systems each device operating in full duplex mode can transmit and receive information at the same time.

- Various transmission media and topologies

The transmission media can be coaxial cable, twisted pair, multi-mode/single-mode optic fiber. Topologies include bus, star and ring.

- Continuing development

Ethernet has developed to real-time and wireless stage. With its compatibility with existing technology it has a very wide application.



Industrial Ethernet Basics

Conforming to the same IEEE802.3 protocol used in office Ethernet systems, Industrial Ethernet is the Ethernet technology used in the industrial control area. Compared with devices in office Ethernet, those in Industrial Ethernet have increased longevity, reliability, restorability, immediacy, mutual operability and anti-interference performance; they use better materials, and are available to meet intrinsically safety requirements.

Using switches as an example, the table below demonstrates some of the technical differences between devices designed for office and industrial environments.

Parameters	Office Ethernet	Industrial Ethernet
Power supply	single power	dual power
Mounting	rack	DIN rail, rack
Operation Temperature	narrow	wide
Heat Elimination	electric fan	housing
EMC	office standard	industrial
Link recovery time	> 30s	< 300ms
MTBF	less than 5 years	more than 20 years

To summarise, office Ethernet equipment is only designed for comfortable office environments, so it is unsuitable for industrial applications with heavy load, frequent vibration and wide operation temperature range. Industrial networks demand strong reliability, restorability and maintainability, especially for manufacturing industries. Industrial Ethernet devices also allow for complex industrial applications and are more suitable for harsh environments.
With the spread of internet technology, increased transmission rates and advances in switching methods, industrial Ethernet is being rapidly developed and improved, making it possible for Ethernet to be used extensively in modern industrial communications systems.

Industrial Ethernet Standards

Ethernet standard IEEE 802.3

IEEE 802.3 is a working group and a collection of IEEE standards produced by the working group defining the physical layer and data link layer's media access control (MAC) of wired Ethernet. This is generally a local area network technology with some wide area network applications.

The table below shows some of the commonly used 802.3 standards.

Ethernet Protocols	Description
802.3i	10BASE-T 10 Mbit/s (1.25 MB/s) over twisted pair
802.3j	10BASE-F 10 Mbit/s (1.25 MB/s) over Fiber-Optic
802.3u	100BASE-TX, 100BASE-FX Fast Ethernet at 100 Mbit/s with auto-negotiation
802.3x	Full Duplex and flow control; also incorporates DIX framing
802.3z	1000BASE-X Gbit/s Ethernet over Fiber-Optic at 1 Gbit/s (125 MB/s)
802.3ab	1000BASE-T Gbit/s Ethernet over twisted pair at 1 Gbit/s (125 MB/s)
802.3ac	Max frame size extended to 1522 bytes (to allow "Q-tag") The Q-tag includes 802.1Q VLAN information and 802.1p priority information
802.3ae	10 Gbit/s (1,250 MB/s) Ethernet over fiber
802.3af	Power over Ethernet (12.95 W)

UDP

User Datagram Protocol
- No point-to-point connection
- Data package without serial number
- No checking message
- Fast transmission rate
- Unreliable data transmission

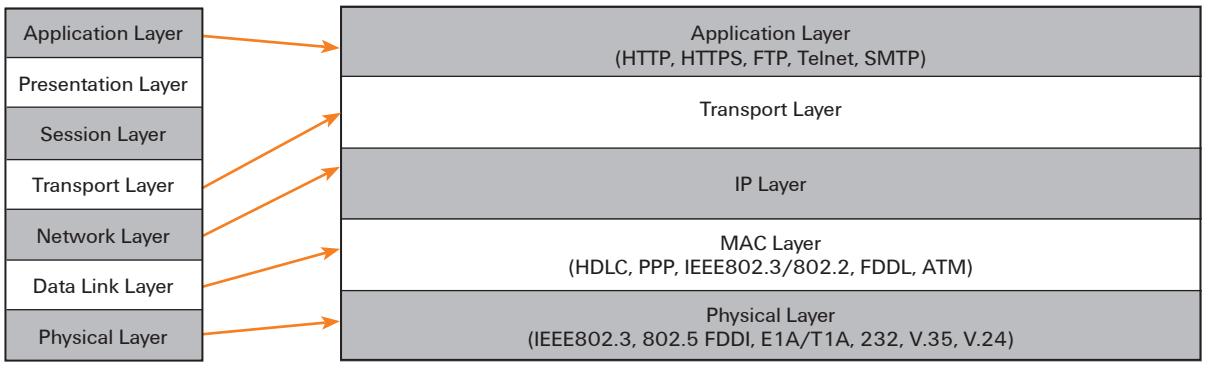
TCP

Transmission Control Protocol
- Point-to-point connection
- Data package with serial number
- Request, send, receiving check process
- Uses greater bandwidth
- Reliable data transmission

PPP

Point to Point Protocol
- Automatic self configuration
- Multiple network layer protocols
- Looped link detection Initiates and terminates connections gracefully
- No transmission rate limitation

The following table compares the OSI model with Ethernet model.



OSI model **TCP/IP model in Ethernet**

In addition, some commonly used protocols include Profinet, Ethernet/IP, EPA, EtherCAT, VNET/IP, TC net and Modbus-IDA, etc.

Industrial Ethernet Devices

Switches

Switches, also called switching hubs, refer to network bridges that process and route data at the link layer (layer 2) of the OSI model. The main function of a switch is the automatic addressing and switching of data. All ports of a switch can work independently in parallel and full duplex mode, thus avoiding collisions and meeting the growing load requirements of Industrial Ethernet.

Unmanaged Industrial Ethernet Switch

- Efficient store-and-forward
- LED status indication
- Transparent transmitting VLAN tag
- Various product series

Managed Industrial Ethernet Switch

- Various management methods
- Comprehensive management functions
- Advanced management functions like QoS, VLAN
- Various product series

Comparison of the functions of unmanaged and managed Industrial Ethernet switches

Characteristics	Unmanaged Ethernet Switch	Managed Ethernet Switch
10/100Base T(X) auto-negotiation	✓	✓
Automatic MDI/MDI-X connection	✓	✓
Web management service		✓
W-Ring, RSTP		✓
QoS, flow control		✓
VLAN, IGMP Snooping		✓
Software for managing and monitoring		✓

Media Converter

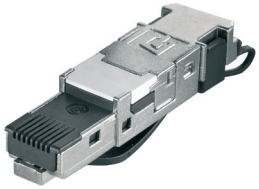
With the increased application of Industrial Ethernet and the requirement for long distance transmission, optic fiber has become a popular transmission medium. Since the connection for optic fiber is completely different to that for twisted pair, a media converter is required to connect fiber optic networks to existing copper networks, by routing data between optic fiber ports and RJ45 ports.

Media converters allow Ethernet with long transmission distances, high speed and large bandwidth. They have various connection options for single-mode optic fiber and multi-mode optic fiber.

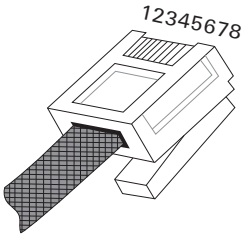
Industrial Ethernet Interfaces

RJ45

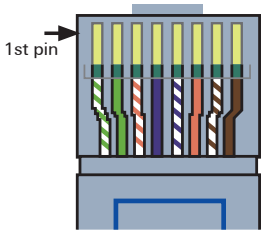
In a copper Ethernet connection, data is converted to a binary electrical signal for transmission over the twisted pair cable (Physical layer of the OSI model). The electrical signals representing by binary codes 0 or 1 are received and converted (at the Data Link Layer level) to data frames.



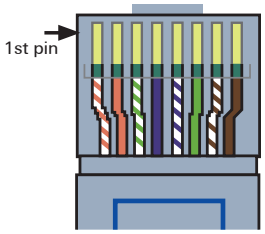
RJ45 connectors can be wired as either T568A and T568B types. Twisted pair that has direct connection between connectons at each end is called straight through cable, while the other type is called a cross-over cable.



RJ45 plug



T568A assignment

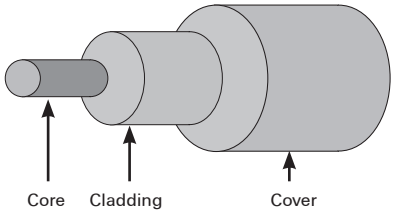


T568B assignment

Optical fiber interfaces

To send data over an optical fiber, the data is converted to a series of binary pulses (at a fixed frequency) and sent down the fiber using an LED. At the other end the pulses are detected by a matched photodiode. This string of binary 0s and 1s is assembled back into packets of data at the data link layer.

Due to the property of total internal reflection, light transmitted in optical fiber has the advantage of low power loss and attenuation so it can be used to send signals over large distances. The typical composition of optical fiber is core, cladding and cover, as shown.



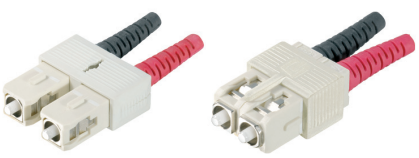
Single-mode optic fiber

Multi-mode optic fiber

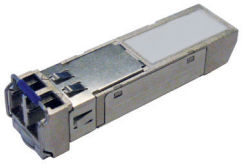
Light can be transmitted in two modes: single mode and multimode. For single mode optical fiber there is no reflection off the walls of the fiber during transmission, this allows greater bandwidth and data rates, over longer distances, than multimode fiber.

Most commonly used fiber optic connectors

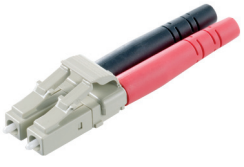
The most commonly used fiber optic connectors are SC, ST, LC, as well as some combined connectors such as SFP, Combo.



SC connectors



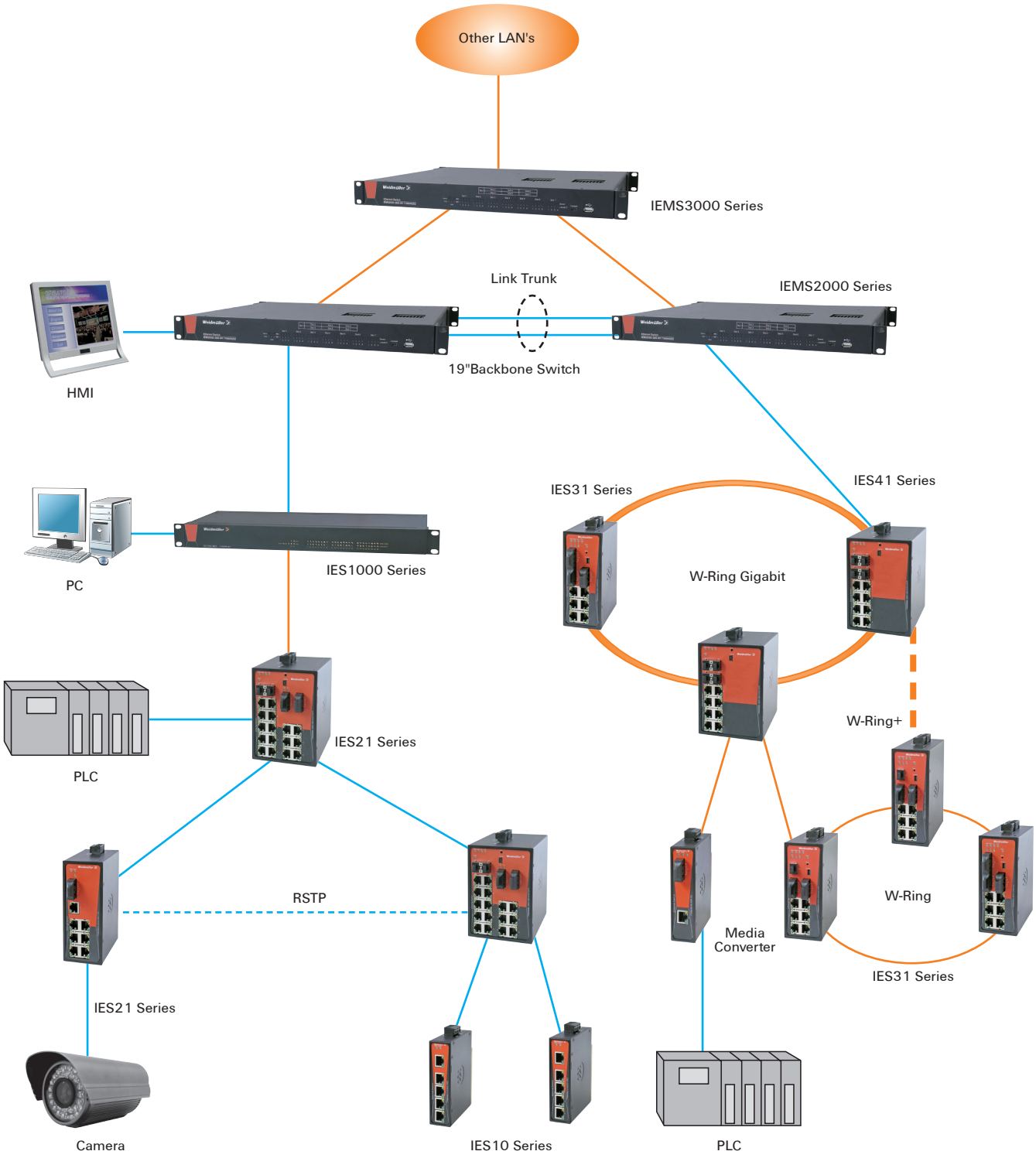
SFP multi-function connector



LC connector

ST connector

Industrial Ethernet Solutions



Din-Rail (Wall) Mounting Product Index

Series	Type	Managed	Order No.	Page	Port				
					Port quantity	Fast Ethernet Ports			
						10/100BASE T(X)	100BaseFX		
							SM SC	MM SC	
IES10	IES10-SW5	No	7760048001	**17**	5	5			
	IES10-SW8	No	7760048002	**17**	8	8			
IES20	IES20-SW5	No	7760048010	**18**	5	5			
	IES20-SW4/1SC	No	7760048011	**18**	5	4		1	
	IES20-SW4/1SCS	No	7760048012	**18**	5	4	1		
	IES20-SW2/1SC	No	7760048013	**18**	3	2		1	
	IES20-SW2/1SCS	No	7760048014	**18**	3	2	1		
	IES20-SW8	No	7760048015	**18**	8	8			
	IES20-SW6/2SC	No	7760048016	**18**	8	6		2	
	IES20-SW6/2SCS	No	7760048017	**18**	8	6	2		
	IES20-SW6/3SC	No	7760048018	**18**	9	6		3	
	IES20-SW6/3SCS	No	7760048019	**18**	9	6	3		
	IES20-SW7/1SC	No	7760048020	**18**	8	7		1	
	IES20-SW7/1SCS	No	7760048021	**18**	8	7	1		
	IES20-SW16	No	7760048022	**18**	16	16			
	IES20-SW14/2SC	No	7760048023	**18**	16	14		2	
	IES20-SW14/2SCS	No	7760048024	**18**	16	14	2		
IES40	IES40-SW5	No	7760048030	**20**	5				
	IES40-SW8	No	7760048031	**20**	8				
	IES40-SW6/2Combo	No	7760048032	**20**	8				
IES21	IES21-SW8	Yes	7760048050	**28**	8	8			
	IES21-SW6/3SC	Yes	7760048051	**28**	9	6		3	
	IES21-SW6/3SCS	Yes	7760048058	**28**	9	6	3		
	IES21-SW4/2SC	Yes	7760048040	**28**	6	4		2	
	IES21-SW4/2SCS	Yes	7760048041	**28**	6	4	2		
	IES21-SW6/2SC	Yes	7760048052	**28**	8	6		2	
	IES21-SW6/2SCS	Yes	7760048053	**28**	8	6	2		
	IES21-SW6/2SCS/1SC	Yes	7760048054	**28**	9	6	2	1	
	IES21-SW16	Yes	7760048055	**28**	16	16			
	IES21-SW14/2SC	Yes	7760048056	**28**	16	14		2	
	IES21-SW14/2SCS	Yes	7760048057	**30**	16	14	2		
IES31	IES31-SW6/3SFP	Yes	7760048080	**30**	9	6			
	IES31-SW6/2SFP	Yes	7760048081	**30**	8	6			
	IES31-SW16/2Combo	Yes	7760048082	**30**	18	16			
	IES31-SW6/2SC/1SFP	Yes	7760048083	**30**	9	6		2	
	IES31-SW6/2SCS/1SFP	Yes	7760048084	**30**	9	6	2		
	IES31-SW14/2SC/2Combo	Yes	7760048085	**30**	18	14		2	
IES41	IES31-SW14/2SCS/2Combo	Yes	7760048086	**32**	18	14	2		
	IES41-SW6/2Combo	Yes	7760048110	**32**	8				
IEM	IES41-SW6/2Combo+2SFP	Yes	7760048111	**21**	10				
	IEM-SC	No	7760048140	**21**	2	1		1	
	IEM-SCS	No	7760048141	**21**	2	1	1		
	IEM-ST	No	7760048142	**21**	2	1			
	IEM-SCS-Ext	No	7760048143	**21**	2	1	1		

Din-Rail (Wall) Mounting Product Index

				Power supply	Operation Temperature		Storage Temperature	Protection level
	Gigabit Ethernet Ports			18...72VDC / 18...50VAC				
	1000Base T(X)	1000BaseX			0°C...60 °C	-40...85 °C	-40...85 °C	IP 40
MM ST		1000Base SFP	1000Base Combo					
				✓	✓		✓	✓
				✓	✓		✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
	5			✓		✓	✓	✓
	8			✓		✓	✓	✓
	6		2	✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
		3		✓		✓	✓	✓
		2		✓		✓	✓	✓
			2	✓		✓	✓	✓
		1		✓		✓	✓	✓
		1		✓		✓	✓	✓
			2	✓		✓	✓	✓
			2	✓		✓	✓	✓
	6		2	✓		✓	✓	✓
	6	2	2	✓		✓	✓	✓
				✓		✓	✓	✓
				✓		✓	✓	✓
1				✓		✓	✓	✓
				✓		✓	✓	✓

Rack Mounting Product Index

Series	Type	Managed	Order No.	Page	Ports			
					Port quantity	Fast Ethernet Ports		
						10/100Base T(X)	100BaseFX	
							SM SC	MM SC
IES1000	IES1000-SW24	Simple	7760048180	**34**	24	24		
	IES1000-SW24/2SC	Simple	7760048181	**34**	26	24		2
IEMS2000(T)	IEMS2000-4G+24-HV	Yes	7760048200	**36**	28	Max. 24 via data module		
	IEMS2000-4G+24	Yes	7760048201	**36**	28	Max. 24 via data module		
	IEMS2000-28G-HV	Yes	7760048202	**36**	28	Max. 24 via data module		
	IEMS2000-28G	Yes	7760048203	**36**	28	Max. 24 via data module		
	IEMS2000T-4G+24-HV	Yes	7760048204	**36**	28	Max. 24 via data module		
	IEMS2000T-4G+24	Yes	7760048205	**36**	28	Max. 24 via data module		
	IEMS2000T-28G-HV	Yes	7760048206	**36**	28	Max. 24 via data module		
	IEMS2000T-28G	Yes	7760048207	**36**	28	Max. 24 via data module		
IEMS3000(T)	IEMS3000-4G+24-HV	Yes	7760048220	**38**	28	Max. 24 via data module		
	IEMS3000-4G+24	Yes	7760048221	**38**	28	Max. 24 via data module		
	IEMS3000-28G-HV	Yes	7760048222	**38**	28	Max. 24 via data module		
	IEMS3000-28G	Yes	7760048223	**38**	28	Max. 24 via data module		
	IEMS3000T-4G+24-HV	Yes	7760048224	**38**	28	Max. 24 via data module		
	IEMS3000T-4G+24	Yes	7760048225	**38**	28	Max. 24 via data module		
	IEMS3000T-28G-HV	Yes	7760048226	**38**	28	Max. 24 via data module		
	IEMS3000T-28G	Yes	7760048227	**38**	28	Max. 24 via data module		
Data module for IEMS2000(T) and IEMS3000(T) series	RM2-4G		7760048279					
	RM2-4SFP		7760048280					
	RM2-2G/2SFP		7760048281					
	RM-4G		7760048260					
	RM-4SFP		7760048261					
	RM-2G/2SFP		7760048262					
	RM-2SC/2SFP		7760048263					2
	RM-2SCS/2SFP		7760048264				2	
	RM-2ST/2SFP		7760048265					
	RM-2STS/2SFP		7760048266					
	RM-4T		7760048267			4		
	RM-4SC		7760048268					4
	RM-4SCS		7760048269				4	
	RM-4ST		7760048270					
	RM-4STS		7760048271					
	RM-2T/2SC		7760048272			2		2
	RM-2T/2SCS		7760048273			2	2	
	RM-2T/2ST		7760048274			2		
	RM-2T/2STS		7760048275			2		

Rack Mounting Product Index

Gigabit Ethernet Ports								Height	Operation Temperature		Storage Temperature	Protection level
	SM ST	MM ST	10/100/1000 BaseT(X)	SFP	36...72VDC	100...240VAC / 140...336VDC	85...264VAC / 77...370VDC		0...60 °C	-40...85 °C	-40...85 °C	IP 40
						✓		1 U	✓		✓	✓
						✓		1 U	✓		✓	✓
			Max. 4 via data module				✓	1 U		✓	✓	✓
			Max. 4 via data module		✓			1 U		✓	✓	✓
			Max. 28 via data module				✓	1 U		✓	✓	✓
			Max. 28 via data module		✓			1 U		✓	✓	✓
			Max. 4 via data module				✓	1 U		✓	✓	✓
			Max. 4 via data module		✓			1 U		✓	✓	✓
			Max. 28 via data module				✓	1 U		✓	✓	✓
			Max. 28 via data module		✓			1 U		✓	✓	✓
			Max. 4 via data module				✓	1 U		✓	✓	✓
			Max. 4 via data module		✓			1 U		✓	✓	✓
			Max. 28 via data module				✓	1 U		✓	✓	✓
			Max. 28 via data module		✓			1 U		✓	✓	✓
			Max. 4 via data module				✓	1 U		✓	✓	✓
			Max. 4 via data module		✓			1 U		✓	✓	✓
			Max. 28 via data module				✓	1 U		✓	✓	✓
			Max. 28 via data module		✓			1 U		✓	✓	✓
			4					1 U		✓	✓	
				4				1 U		✓	✓	
								1 U		✓	✓	
			4					0.5 U		✓	✓	
				4				0.5 U		✓	✓	
			2	2				0.5 U		✓	✓	
				2				0.5 U		✓	✓	
				2				0.5 U		✓	✓	
		2		2				0.5 U		✓	✓	
	2			2				0.5 U		✓	✓	
								0.5 U		✓	✓	
								0.5 U		✓	✓	
								0.5 U		✓	✓	
		4						0.5 U		✓	✓	
	4							0.5 U		✓	✓	
								0.5 U		✓	✓	
								0.5 U		✓	✓	
		2						0.5 U		✓	✓	
	2							0.5 U		✓	✓	

Unmanaged Industrial Ethernet Switches

Product overview

The industrial Ethernet switch is required to work in harsh environments with large variations in temperature, humidity and EMC in substation, wind power, oil gas, mines and marine industries. This makes the quality of the switch critical. Weidmuller unmanaged switches utilise our past experience using the industrial elements; metal housing acts as a heatsink, eliminating the need for a fan. This provides IP40 protection and ensures a wide operating temperature range (-10...85˚C or -40...85˚C) and conformance to various international standards (like CE, FCC, cULus). Weidmuller Ethernet switches are ideally suited to all industrial environments.

Excellent performance

1. Efficient store and forward
Using the cyclic redundancy check (CRC) mode means that frames are only forwarded to the destination address after error-checking, thus filtering corrupt frames and improving network performance. The data exchange delay of this series is minimal thanks to the short checking time.

2. LED status indication
On the front panels of all Weidmuller switches there are various LED indicators, displaying the operation status of power supply, running and ports. The indicators make it convenient for users to check for errors and see the status in real time.

3. Transparent transmitting VLAN tag
If your network uses the VLAN tags to support logical network connections (IEEE 802.1 protocol defines VLAN tag as a 4-byte TPID mark in the untagged Ethernet frames), our unmanaged switches can transmit these tagged packets absolutely transparently for processing by the managed switches.

Three series of products, complete types

Entry-level IES10 series

- Economical switch with high performance
- Compact housing
- 5 or 8 RJ45 fast Ethernet ports
- Single power input: 24/48VDC(18~72VDC), 24/48VAC(18~50VAC)
- Operating temperature range: 0...60˚C

IES10 series entry-level industrial Ethernet switch is an unmanaged plug-and-play switch with tough metal housing and IP40 protection level. This series supports fast Ethernet and provides an economical and practical solution for your industrial Ethernet applications.

IES20 series

- Compact housing
- 2 to 16 RJ45 fast Ethernet ports and
- 1, 2 or 3 multimode/singlemode fiber ports
- Redundant power input: 24/48VDC(18~72VDC), 24/48VAC(18~50VAC)
- Operating temperature range: -40...85˚C

IES20 series unmanaged switches are specially designed for harsh industrial environments. Multimode / Singlemode optical fibre ports are available in various combinations to suit your application.

Full Gigabit IES40 series

- Compact housing
- 5 to 8 RJ45 full gigabit Ethernet ports
- 2 SFP full gigabit port available
- Redundant power input: 24/48VDC(18~72VDC), 24/48VAC(18~50VAC)
- Operating temperature range: -40...85˚C

IES40 series provide you with economical industrial gigabit Ethernet solutions. 5 to 8 full gigabit RJ45 ports are available, as well as SFP gigabit Ethernet ports. With a wide operating temperature range of -40..85˚C and IP40 protection level, this series suits harsh industrial environments. Redundant power supply connections improve overall reliability.

IES10 Series Unmanaged Entry-level Industrial Ethernet Switch

- Protection level: IP40
- Operation temperature: 0˚C to +60˚C
- Metal, fanless
- DIN-Rail or wall mounting
- Input voltage: 24V DC/AC (18~72 VDC / 18~50 VAC)

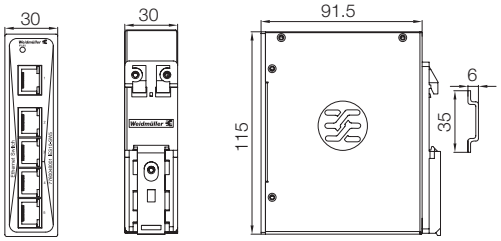
Technical data

Interface	
Fast Ethernet port	10/100Base-T(X), auto-negotiation, auto-crossing, Full/Half duplex, RJ45 connector
Twisted pair	100 m (standard CAT5, CAT5e LAN cable)
Status indication	Power LED: PWR Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Star, line
Diagnosis	LED (power supply and port)
Power Supply	
Input voltage	24V DC/AC (18~72 VDC / 18~50 VAC)
Connecting terminal	3 pole 5.08mm pitch terminal block
Power consumption	<2.9 W, details on attached type selection table
Protection	Overload voltage protection, reverse polarity protection
Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	DIN-Rail or wall mounting
Dimensions	Total ports 5: 30mm×115mm×91.5mm (W×H×D) Total ports 8: 53.6mm×135mm×106.5mm (W×H×D)
Weight	Total ports 5: 0.46 kg Total ports 8: 0.76 kg
Environment	
Operation temperature	0˚C to +60˚C
Storage temperature	-40˚C to +85˚C
Humidity	5%~95% (non-condensing)
MTBF	49.3 ~ 51.6 years, details on attached type selection table
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz)
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
Railway	EN50155, EN50121-4
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Warranty	
Warranty	5 years

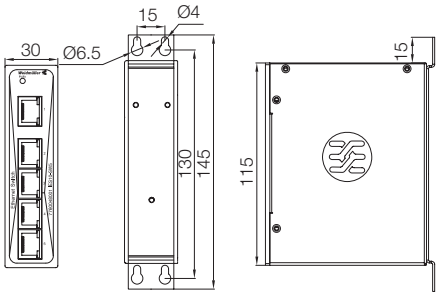
Dimension Drawing

W x H x D: 30mm x 115mm x 91.5mm

Din-Rail Mounting Dimensions

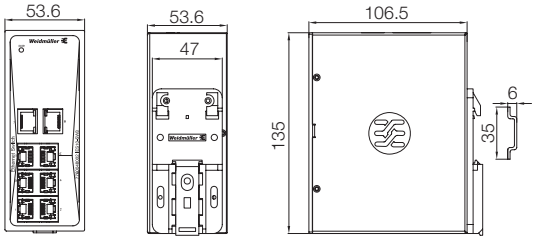


Wall Mounting Dimensions

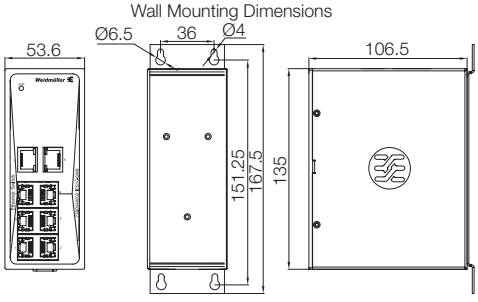


W x H x D: 53.6mm x 135mm x 106.5mm

Din-Rail Mounting Dimensions



Wall Mounting Dimensions



Ordering information

Type	Order No.	Port Qty.	10/100 Base T(X)	Power Consumption (W)	Dimension (mm) W×H×D	Weight	MTBF (years)
IES10-SW5	7760048001	5	5	<1.9	30×115×91.5	0.46 kg	51.6
IES10-SW8	7760048002	8	8	<2.9	53.6×135×106.5	0.76 kg	49.3
Dust Cap RJ45							
IE-DPC	8813490000						

* Wall mounting devices are on demand.

IES20 Series Unmanaged Industrial Ethernet Switch

- Protection level: IP40
- Operation temperature: -40 °C to +85 °C
- Metal, fanless
- DIN-Rail or wall mounting
- Input voltage: 24V DC/AC (18~72 VDC / 18~50 VAC)

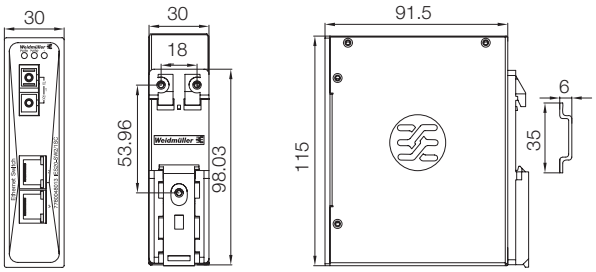
Technical data

Interface	
RJ45 Fast Ethernet port	10/100Base-T(X), auto-negotiation, auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic	100Base-FX, singlemode/multimode, SC connector
Multi-mode optic fibre	1310 nm, 5 km
Single-mode optic fibre	1310 nm, 40 km
Status indication	Power LED: PWR1, PWR2 (redundant power input) Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Star, line
Redundancy	Power supply
Diagnosis	LED (power supply and port)
Power Supply	
Input voltage	24V DC/AC (18~72 VDC / 18~50 VAC)
Connecting terminal	5 pole 5.08mm pitch terminal block
Power consumption	<7.9 W, details on attached type selection table
Protection	Overload voltage protection, reverse polarity protection, redundancy protection
Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	DIN-Rail or wall mounting
Dimensions	Total ports 3 or 5: 30mm×115mm×91.5mm (W×H×D) Total ports 8 or 9: 53.6mm×135mm×106.5mm (W×H×D) Total ports 16: 88mm×135mm×137mm (W×H×D)
Weight	Total ports 3 or 5: 0.46 kg Total ports 8 or 9: 0.76 kg Total ports 16: 1.56 kg
Environment	
Operation temperature	-40 °C to +85 °C
Storage temperature	-40 °C to +85 °C
Humidity	5%~95% (non-condensing)
MTBF	29.8 ~ 52.3 years, details on attached type selection table
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz)
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
Railway	EN50155, EN50121-4
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Warranty	
Warranty	5 years

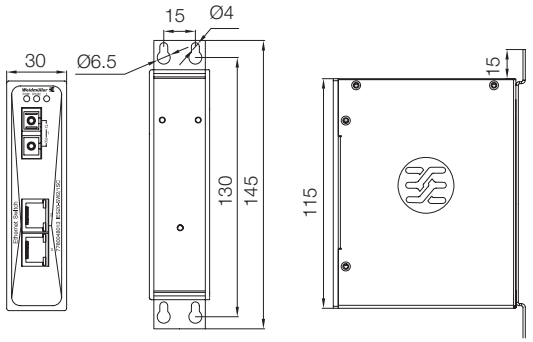
Dimension Drawing

W x H x D: 30mm x 115mm x 91.5mm

Din-Rail Mounting Dimensions



Wall Mounting Dimensions

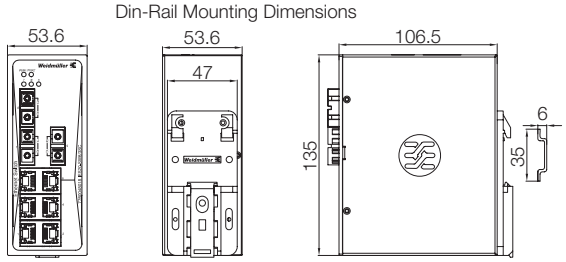


IES20 Series Unmanaged Industrial Ethernet Switch

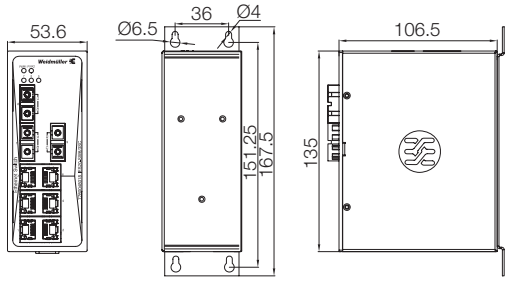
Dimension Drawing

W x H x D: 53.6mm x 135mm x 106.5mm

Din-Rail Mounting Dimensions

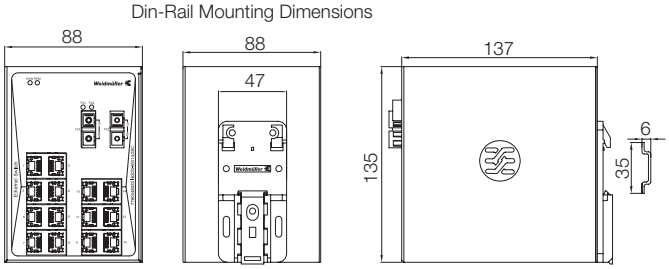


Wall Mounting Dimensions

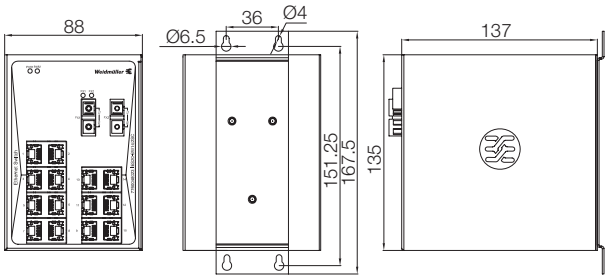


W x H x D: 88mm x 135mm x 137mm

Din-Rail Mounting Dimensions



Wall Mounting Dimensions



Ordering information

Type	Order No.	Port Qty.	10/100 Base T(X)	100Base FX		Power Consumption (W)	Dimension (mm) W×H×D	Weight	MTBF (years)
				Multimode SC	Singlemode SC				
IES20-SW2/1SC	7760048013	3	2	1		<2.3	30×115×91.5	0.46 kg	52.3
IES20-SW2/1SCS	7760048014	3	2		1	<2.3	30×115×91.5	0.46 kg	52.3
IES20-SW5	7760048010	5	5			<1.9	30×115×91.5	0.46 kg	51.6
IES20-SW4/1SC	7760048011	5	4	1		<2.3	30×115×91.5	0.46 kg	51.6
IES20-SW4/1SCS	7760048012	5	4		1	<2.3	30×115×91.5	0.46 kg	51.6
IES20-SW8	7760048015	8	8			<2.9	53.6×135×106.5	0.76 kg	49.3
IES20-SW6/2SC	7760048016	8	6	2		<4.4	53.6×135×106.5	0.76 kg	49.3
IES20-SW6/2SCS	7760048017	8	6		2	<4.4	53.6×135×106.5	0.76 kg	49.3
IES20-SW7/1SC	7760048020	8	7	1		<4.4	53.6×135×106.5	0.76 kg	49.3
IES20-SW7/1SCS	7760048021	8	7		1	<4.4	53.6×135×106.5	0.76 kg	49.3
IES20-SW6/3SC	7760048018	9	6	3		<4.4	53.6×135×106.5	0.76 kg	49.3
IES20-SW6/3SCS	7760048019	9	6		3	<4.4	53.6×135×106.5	0.76 kg	49.3
IES20-SW16	7760048022	16	16			<7.3	88×135×137	1.25 kg	29.8
IES20-SW14/2SC	7760048023	16	14	2		<7.6	88×135×137	1.25 kg	29.8
IES20-SW14/2SCS	7760048024	16	14		2	<7.6	88×135×137	1.25 kg	29.8
Dust Cap RJ45									
IE-DPC	8813490000								

* Wall mounting devices with ST optical fiber connector are on demand.

IES40 Series Unmanaged Industrial Ethernet Switch

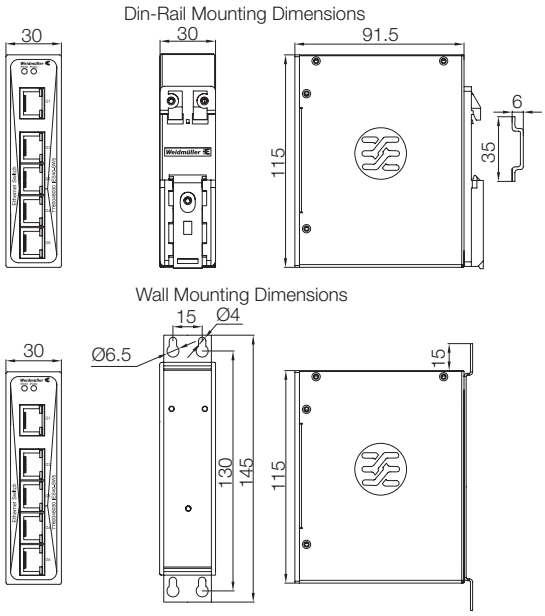
- Protection level: IP40
- Operation temperature: -40˚C to +85˚C
- Metal, fanless
- DIN-Rail or wall mounting
- Input voltage: 24V DC/AC (18~72 VDC / 18~50 VAC)

Technical Data

Interface	
RJ45 Gigabit Ethernet port	10/100/1000Base-T(X), Auto-negotiation, Auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic	10/100/1000Base-T(X), 1000Base-X, Combo
Multi-mode optic fibre	850 nm, 550 m
Single-mode optic fibre	1310 nm, 40 km; 1550 nm, 60 km/80 km (please refer to SFP details on Page 17)
Status indication	Power LED: PWR1, PWR2 (redundant power input) Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Star, line
Redundancy	Power supply
Diagnosis	LED (power supply and port)
Power Supply	
Input voltage	24V DC/AC (18~72 VDC / 18~50 VAC)
Connecting terminal	5 pole 5.08mm pitch terminal block
Power consumption	<10.3 W, details on attached type selection table
Protection	Overload voltage protection, reverse polarity protection, redundancy protection
Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	DIN-Rail or wall mounting
Dimensions	Total ports 5: 30mm×115mm×91.5mm (W×H×D) Total ports 8: 88mm×135mm×137mm (W×H×D)
Weight	Total ports 5: 0.46 kg Total ports 8: 0.76 kg
Environment	
Operation temperature	-40˚C to +85˚C
Storage temperature	-40˚C to +85˚C
Humidity	5%~95% (non-condensing)
MTBF	40.8 ~ 49.5 years, details on attached type selection table
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz)
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
Railway	EN50155, EN50121-4
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Marine	GL (pending)
Warranty	
Warranty	5 years

Dimension Drawing

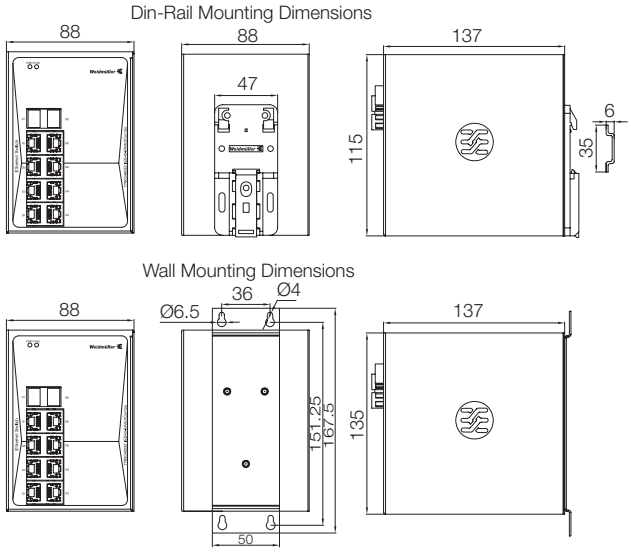
W x H x D: 30mm x 115mm x 91.5mm



IES40 Series Full Gigabit Unmanaged Industrial Ethernet Switch

Dimension Drawing

W x H x D: 88mm x 135mm x 137mm

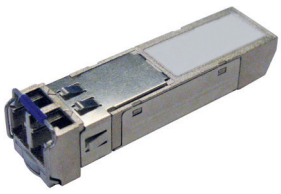


Ordering information

Type	Order No.	Port Qty.	10/100/1000 Base T(X)	1000Base X Combo	Power Consumption (W)	Dimension (mm) W×H×D	Weight	MTBF (years)
IES40-SW5	7760048030	5	5		<4.3	30×115×91.5	0.46 kg	49.5
IES40-SW8	7760048031	8	8		<10.3	88×135×137	0.76 kg	40.8
IES40-SW6/2Combo	7760048032	8	6	2	<9.0	88×135×137	0.76 kg	40.8
Dust Cap RJ45								
IE-DPC	8813490000							

* Wall mounting devices with ST optical fiber connector are on demand. Please see below for SFP transceivers.

SFP transceiver



Type	Order No.	Description
IE-SFP-1G-850-MM	7760048150	Gigabit Ethernet, LC-Connector, distance 550 m multi-mode
IE-SFP-1G-1310-SM10	7760048152	Gigabit Ethernet, LC-Connector, distance 10 km, single-mode
IE-SFP-1G-1550-SM40	7760048155	Gigabit Ethernet, LC-Connector, distance 40 km, single-mode
IE-SFP-1G-1550-SM60	7760048156	Gigabit Ethernet, LC-Connector, distance 60 km, single-mode
IE-SFP-1G-1550-SM80	7760048157	Gigabit Ethernet, LC-Connector, distance 80 km, single-mode
IE-SFP-1G-RJ45-100	7760048158	Gigabit Ethernet, 10/100/1000M auto negotiate RJ45 100m
IE-SFP-F-1310-MM2	7760048159	Fast Ethernet, LC-Connector, distance 2 km, multi-mode
IE-SFP-F-1310-SM10	7760048160	Fast Ethernet, LC-Connector, distance 10 km, single mode

IEM Series Media Converter

- Protection level: IP40
- Operation temperature: -40˚C to +85˚C
- Metal, fanless
- DIN-Rail or wall mounting
- Input voltage: 24V DC/AC (18~72 VDC / 18~50 VAC)

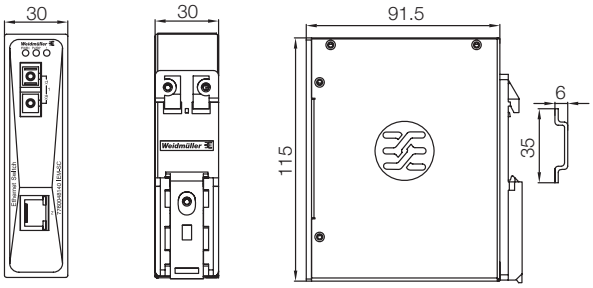
Technical Data

Interface	
Fast Ethernet port	10/100Base-T(X), auto-negotiation, auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic	100Base-FX, singlemode/multimode, SC/ST connector
Multi-mode optic fibre	1310 nm, 5 km
Single-mode optic fibre	1310 nm, 40 km/80 km
Status indication	Power LED: PWR1, PWR2 (redundant power input) Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Line
Redundancy	Power supply
Diagnosis	LED (power supply and port)
Power Supply	
Input voltage	24V DC/AC (18~72 VDC / 18~50 VAC)
Connecting terminal	5 pole 5.08mm pitch terminal block
Power consumption	<1.8 W
Protection	Overload voltage protection, reverse polarity protection, redundancy protection
Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	DIN-Rail or wall mounting
Dimensions	30mm×115mm×91.5mm (W×H×D)
Weight	0.46 kg
Environment	
Operation temperature	-40˚C to +85˚C
Storage temperature	-40˚C to +85˚C
Humidity	5%~95% (non-condensing)
MTBF	66.4 years
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz)
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
Railway	EN50155, EN50121-4
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Warranty	
Warranty	5 years

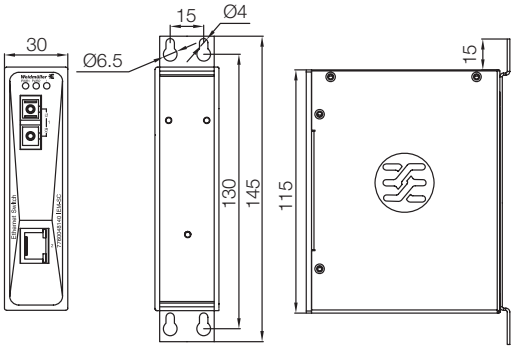
Dimension Drawing

W x H x D: 30mm x 115mm x 91.5mm

Din-Rail Mounting Dimensions



Wall Mounting Dimensions



Ordering information

Type	Order No.	Port Qty.	10/100 Base T(X)	100Base FX			Power (W) Consumption (W)	Dimension(mm) W×H×D	Weight	MTBF (year)
				Multimode SC	Multimode ST	Singlemode SC				
IEM-SC	7760048140	2	1	1			<1.8 W	30×115×91.5	0.46 kg	66.4
IEM-SCS	7760048141	2	1			1	<1.8 W	30×115×91.5	0.46 kg	66.4
IEM-ST	7760048142	2	1		1		<1.8 W	30×115×91.5	0.46 kg	66.4
IEM-SCS-Ext	7760048143	2	1			1	<1.8 W	30×115×91.5	0.46 kg	66.4

* Wall mounting devices are on demand.

Weidmüller

Industrial Ethernet Passive

Starts on page B.1

At Weidmuller our core business is connectivity. Using the highest quality of components to connect your fibre and copper infrastructure, our Ethernet range of products will secure your system for life.

Managed Industrial Ethernet Switches

Product Overview

As the most important device in connecting the network, switches with management functions play a vital role in managing the whole local area network. Managed switches support SNMP (Simple Network Management Protocol), which is composed by a series of simple network communication specifications and can handle almost all the basic managing tasks. Managed switches based on SNMP need little network resources but have some security mechanisms.

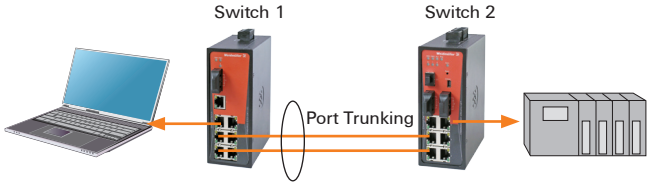
Comprehensive management functions

Managing ways

The managing function can be achieved by the following ways: via Mini-USB, via Web viewer and via management software. Compared with unmanaged switches, managed types have various extended functions, such as VLAN, Ring redundancy, alarm and so on.

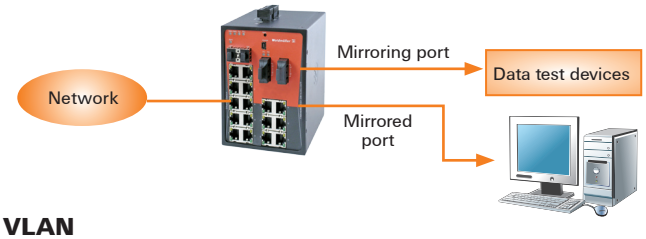
Port Trunking

Port trunking gathers several physical ports into one virtual port by sharing the same VLAN ID. Port trunking can be controlled by one switch and every trunking group can use as many as four physical ports according to the model of switch used. Port trunking relieves network bottlenecks and improves fault tolerance.



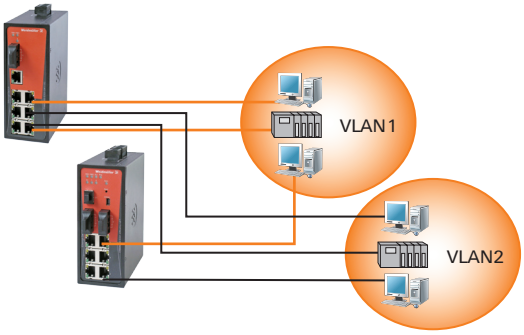
Port mirroring

During error checking and network data flow analysis, we often need to monitor some ports of the switch. Port mirroring enables users to mirror all the data flow in one port at another without affecting the original port. By analysing the data at the mirrored port we can monitor ports in real time during normal operation.



VLAN

Virtual Local Area Network (VLAN) shows exactly the features of modern network: fast, flexible, easy to manage and extend. In industrial Ethernet systems, VLAN restricts frames to the same VLAN domain thus reducing traffic and improving network performance.



Quality of Service (QoS)

Weidmuller managed switches can prioritise network traffic using 802.1p standard as well as IP TOS and DSCP. If the terminal devices connected to the switch do not support these standards, the QoS function provides another alternative. QoS works for packets without a priority domain.

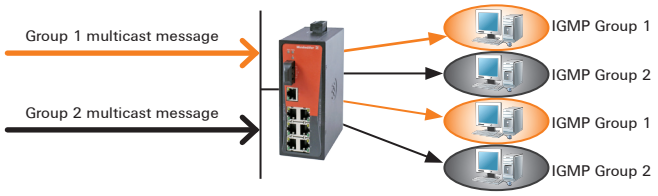
Managed Industrial Ethernet Switches

Simple Network Management Protocol (SNMP)

SNMP provides a framework for network management with broad application to various network devices, software and systems. SNMP is an easy-to-use, open, and convenient protocol that can control a wide range of devices, so it is widely used in the network domain.

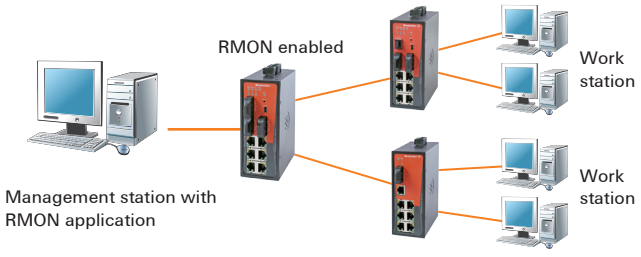
IGMP Snooping

IGMP Snooping, i.e.Internet Group Multicast Protocol Snooping is designed to prevent the multicast frames spreading in the sesond layer network by building a map between ports and multicast MAC. By following the map the multicast frames will go directly to the destination device. At the same time the flow of the network will be reduced.



RMON (Remote monitoring)

RMON is a standard network flow anaysis system which allows data exchange between different network monitoring and control systems. It is an expansion to SNMP and has complete network error checking, planning, performance analysis and historical functions. With its statistical results and analysis reports, you can analyise possible failures, tune performance and modify networks to avoid bottlenecks.

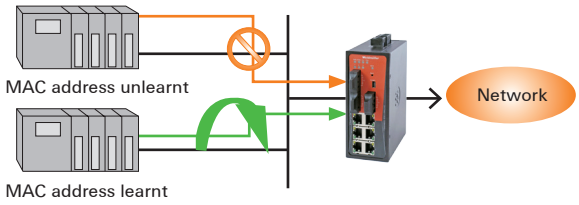


Flow Control

The flow control function of Weidmuller Ethernet switches can not only prevent broadcast storm, but also set the flow rate of incoming and outcoming unicast, multicast and broadcast frames. The rate range is very wide: minimum value 64 Kbps, maximum 100,000 Kbps for 100M ports and 1,000,000 Kbps for 1000M ports. Flow control makes your control over the flow rate more reliable.

Port Security

With the Port Security function enabled, a port will stop learning new MAC addresses and only forward frames with existing MAC addresses. If the function is disabled, the port will continue to learn and forward messages normally. Using this function wisely can give good results in improving network reliability and eliminating broadcast storms.



Alarm

Weidmuller managed switches have various alarm functions, including port alarms, Ring alarms, loss of power alarms and so on. Alarm functions can be configured using a Web browser or process management software. With the alarm status shown on the screen, the field engineer can take actions to deal with the alarm messages according to their priority.

Managed Industrial Ethernet Switches

Redundancy in Industrial Ethernet Networks

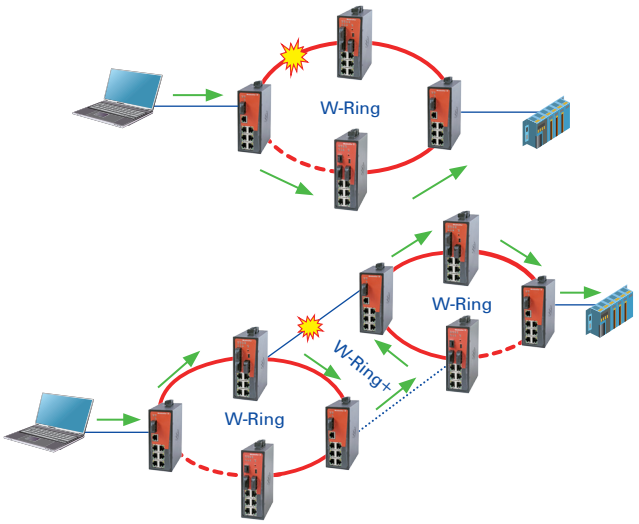
To keep the industrial automation system running efficiently and problem-free, you need an industrial Ethernet system with high availability and fault-tolerance. Yet almost every device in a network can create errors or stop communication. The solution is redundancy. Redundancy is a process of adding redundant devices then arranging them according to safety rules. Extreme industrial environments, such as vibration, temperature difference, or swiching off may easily cause error, especially in connecting parts like cables and connectors. There are two ways to introduce redundancy into Weidmuller Managed Switch networks: one is Ring, the other is spanning tree.

Ring Redundancy

Ring is the most efficient way to realise redundancy. For Weidmuller switches any port can be used to build a ring. The wiring system of the Ring is also like a physical ring, which can prevent the whole system breaking down along with one single error. In normal conditions one link of the Ring doesn't work thus avoiding
loop road.

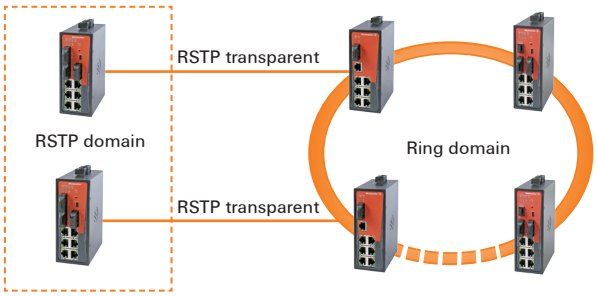
W-Ring makes the automatic change-over possible in less than 20 ms and guarantees the reliability of transmission.

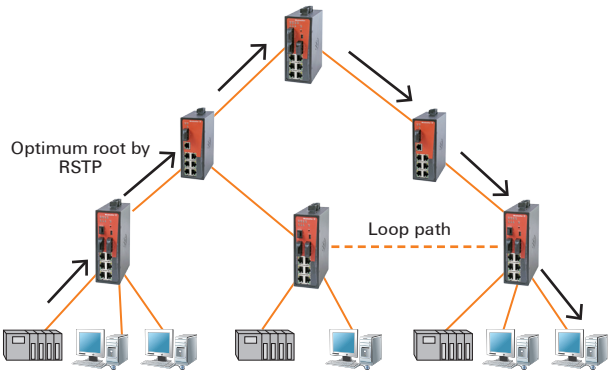
Status of the ring can be checked by visiting the Web page of any switch in the ring. Also you can use the Ring to achieve the redundancy between the rings by arranging two links instead
of one.



RSTP Redundancy

Based on IEEE 802.3w, RSTP (Rapid Spanning Tree Protocol) builds a structure similar to a web and is able to support more functions by realizing more than one redundancy. RSTP is an ideal choice for complex network with unknown linking path. As RSTP must analyse the whole network when choosing the redundant path, so it takes more time than ring redundancy. In some big network systems, the change-over time of RSTP may be as long as several seconds.





Weidmüller switches support IEEE802.1s Multiple Spanning Tree Protocol (MSTP). MSTP is backwards compatible with RSTP and classic STP. MSTP allows multiple redundant paths and balances the load between paths for greater efficiency.

Managed Industrial Ethernet Switches

Weidmüller Managed Industrial Ethernet Switches support many practical managing functions, such as Port Trunking, Port Mirroring, VLAN, QoS, SNMP, IGMP-Snooping, RMON, Flow Control and Ring redundancy. Ring and VLAN can be configured directly through the WEB server. Various alarm functions makes it easy for engineers to check device operation. The products have various international approvals like CE, FCC, cULus, which make it possible to work in harsh environments.

IES21 Series
- High performance switches
- Compact housing
- 4 to 16 RJ45 100M copper ports
- 1 to 3 SM/MM fiber ports
- Redundant power inputs: 24/48VDC(18~72VDC) 24/48VAC(18~50VAC)
- Operating temperature range -40...85˚C

IES21 series industrial Ethernet switches are 100M managed plug-and-play switches with rugged metal housing and IP40 protection level. This series supports various network managing functions including VLAN, QoS, SNMP, RMON, Flow Control, Port Mirroring, Alarm, etc. The combination of 100M copper ports and fiber ports will meet different industrial requirements.

IES31 Series
- Compact housing
- 6 to 14 RJ45 100M copper ports
- 1 to 3 Gigabit Ethernet ports
- Redundant power inputs: 24/48VDC(18~72VDC) 24/48VAC(18~50VAC)
- Operating temperature range -40...85˚C

IES31 is a series of 100M and 1 Gigabit plug-and-play switches with rugged metal housing and IP40 protection level. The series supports various network managing functions including VLAN, QoS, SNMP, RMON, Flow Control, Port Mirroring, Alarm, etc. Weidmüller provides fast Ethernet ports and Gigabit Ethernet SFP ports in various configurations.

IES41 Full Gigabit Series
- Compact housing
- 6 RJ45 full Gigabit Ethernet ports
- 2 Comb full Gigabit Ethernet ports
- Redundancy power input: 24/48VDC(18~72VDC) 24/48VAC(18~50VAC)
- Operating temperature range -40...85˚C

IES41 series industrial Ethernet switches are full Gigabit plug and play switches with rugged metal housing and IP40 protection level. The series supports various network managing functions including VLAN, QoS, SNMP, RMON, Flow Control, Port Mirroring, Alarm, etc. With 6 SFP Gigabit ports and 1 Comb Gigabit port, IES41 series provides various interface solutions for full Gigabit communication.

IES1000 Series
- Standard 1U height
- 220V AC/DC single power supply
- Operation temperature: 0...60˚C
- 24 fast Ethernet RJ45 ports, 0 or 2 fast Ethernet fibre ports

IES1000 series simple managed 19" rack switches have as many as 26 fast Ethernet ports, with the function of VLAN, PVLAN, multicast, QoS, RMON, LLDP, etc.

IEMS2000/2000T Series
- Standard 1U height
- 4 or 28 gigabit Ethernet ports
- 48VDC or 220V AC/DC power supply input
- Flexible configuration with modules

IEMS2000/2000T series gigabit modular layer 2 industrial Ethernet switches have outstanding management functions: Private VLAN, W-Ring with self-recovery time less than 20ms, MSTP, etc. Approved by CE, FCC, this series meets IEC61850-3, IEEE1613. IEMS2000T series also meets IEEE1588 v2 for accurate clock synchronisation.

IES21 Series Managed Industrial Ethernet Switch

- Protection level: IP40
- Operation temperature: -40˚C to +85˚C
- Metal, fanless
- DIN-Rail or wall mounting
- Input voltage: 24V DC/AC (18~72 VDC / 18~50 VAC)

Technical Data

Interface	
RJ45 Fast Ethernet port	10/100Base-T(X), auto-negotiation, auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic	100Base-FX, singlemode/multimode, SC connector
Multi-mode optic fibre	1310 nm, 5 km
Single-mode optic fibre	1310 nm, 40 km
Console port	Mini USB
Alarm	3 pole 5.08mm pitch terminal block, 220VDC Max, 2A Max, 60W Max
Status indication	Operation LED: Run Alarm LED: Alarm Power LED: PWR1, PWR2 Ring LED: Ring Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Ring, star, line
Redundancy	W-Ring (self-recovery time<20 ms), W-Ring+,MSTP(IEEE802.1s), Link Aggregation Control Protocol (IEEE802.3ad), power supply
Management	Web interface, SNMP v1/v2/v3, W-NetManager, W-NetExplorer
Diagnosis	IP/MAC conflict detection, LED (power supply, ring and port), RMON, Link Layer Discovery Protocol (LLDP IEEE802.1AB), port mirroring, syslog, virtual cable test (VCT), link check
Setting	Console interface, CLI, Web interface, Telnet, DHCP Option 82, DHCP client, FTP/TFTP
Security	IEEE 802.1X, HTTPS, SSL, SNMP v3, port security (MAC address), TACACS+, access control list (ACL)
Multicast	IGMP Snooping, GMRP, static multicast(MAC address) Max. IGMP quantity: 256
VLAN	VLAN (IEEE802.1Q), PVLAN, GVRP Max. VLAN quantity: 256 VLAN ID: 1~4094
Network quality control	QoS(IEEE802.1p/1Q), TOS(Type of sevice)/DiffServ (Differentiated service), port speed limit, broadcast limiter, flow control(IEEE802.3x), SNTP Priority queue: 4
Power Supply	
Input voltage	24V DC/AC (18~72 VDC / 18~50 VAC)
Connecting terminal	5 pole 5.08mm pitch terminal block
Power consumption	<11.3 W, details on attached type selection table
Protection	Overload voltage protection, reverse polarity protection, redundancy protection
Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	DIN-Rail or wall mounting
Dimensions	Total ports 6 or 8 or 9: 53.6mm×135mm×106.5mm(W×H×D) Total ports 16: 88mm×135mm×137mm(W×H×D)
Weight	Total ports 6 or 8 or 9: 0.76 kg Total ports 16: 1.25 kg

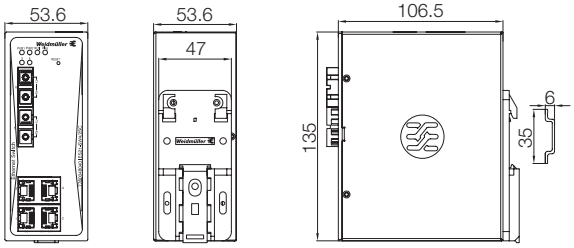
Environment	
Operation temperature	-40˚C to +85˚C
Storage temperature	-40˚C to +85˚C
Humidity	5%~95% (non-condensing)
MTBF	30.3 ~45.4 years, details on attached type selection table
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz)
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
Railway	EN50155, EN50121-4
Power	IEC61850-3 (pending), IEEE1613 (pending)
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Marine	GL (pending)
Warranty	
Warranty	5 years

IES21 Series Managed Industrial Ethernet Switch

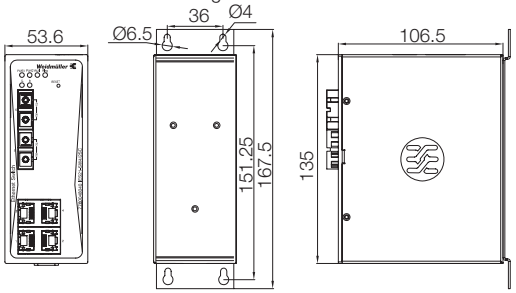
Dimension Drawing

W x H x D: 53.6mm x 135mm x 106.5mm

Din-Rail Mounting Dimensions

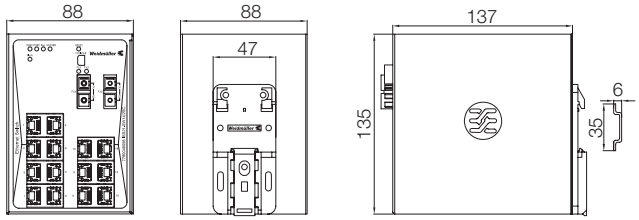


Wall Mounting Dimensions

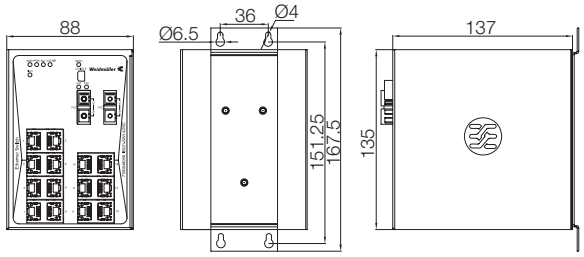


W x H x D: 88mm x 135mm x 137mm

Din-Rail Mounting Dimensions



Wall Mounting Dimensions



Ordering information

Type	Order No.	Port Qty.	10/100 Base T(X)	100Base FX		Power Consumption (W)	Dimension (mm) W×H×D	Weight	MTBF (years)
				Multimode SC	Singlemode SC				
IES21-SW4/2SC	7760048040	6	4	2		<6.6	53.6×135×106.5	0.76 kg	45.4
IES21-SW4/2SCS	7760048041	6	4		2	<6.6	53.6×135×106.5	0.76 kg	45.4
IES21-SW8	7760048050	8	8			<6.6	53.6×135×106.5	0.76 kg	39.7
IES21-SW6/2SC	7760048052	8	6	2		<6.6	53.6×135×106.5	0.76 kg	39.7
IES21-SW6/2SCS	7760048053	8	6		2	<6.6	53.6×135×106.5	0.76 kg	39.7
IES21-SW6/3SC	7760048051	9	6	3		<6.6	53.6×135×106.5	0.76 kg	39.7
IES21-SW6/3SCS	7760048058	9	6		3	<6.6	53.6×135×106.5	0.76 kg	39.7
IES21-SW6/2SCS/1SC	7760048054	9	6	1	2	<11.3	53.6×135×106.5	0.76 kg	39.7
IES21-SW16	7760048055	16	16			<11.3	88×135×137	1.25 kg	30.3
IES21-SW14/2SC	7760048056	16	14	2		<11.3	88×135×137	1.25 kg	30.3
IES21-SW14/2SCS	7760048057	16	14		2	8.1	88×135×137	1.25 kg	30.3
Dust Cap RJ45									
IE-DPC	8813490000								

* Devices and ST optical fiber connector are on demand.

IES31 Series Managed Industrial Ethernet Switch, Gigabit uplink

- Protection level: IP40
- Operation temperature: -40˚C to +85˚C
- Metal, fanless
- DIN-Rail or wall mounting
- Input voltage: 24V DC/AC (18~72 VDC / 18~50 VAC)

Technical Data

Interface	
RJ45 Gigabit Ethernet port	10/100/1000Base-T(X), Auto-negotiation, Auto-crossing, Full/Half duplex, RJ45 connector; 10/100/1000Base-T(X), 1000Base-X, Combo;
Fibre Optic Multi-mode optic fibre Single-mode optic fibre	10/100/1000Base-T(X), 1000Base-X, SFP Gigabit Ethernet: 850 nm, 550 m Gigabit Ethernet: 1310 nm, 10 km/40 km; 1550 nm, 60 km/80 km (please refer to SFP details on page A.27)
RJ45 Fast Ethernet port duplex, RJ45 connector;	10/100Base-T(X), auto-negotiation, auto-crossing, Full/Half
Fibre Optic Multi-mode optic fibre Single-mode optic fibre	100Base-FX, singlemode/multimode, SC connector Fast Ethernet: 1310 nm, 5 km Fast Ethernet: 1310 nm, 40 km
Console port	Mini USB
Alarm 60W Max	3 pole 5.08mm pitch terminal block, 220VDC Max, 2A Max,
Status indication	Operation LED: Run Alarm LED: Alarm Power LED: PWR1, PWR2 Ring LED: Ring Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Ring, star, line
Redundancy	W-Ring (self-recovery time<20 ms), W-Ring+,MSTP(IEEE802.1s), Link Aggregation Control Protocol (IEEE802.3ad), power supply
Management	Web interface, SNMP v1/v2/v3, W-NetManager, W-NetExplorer
Diagnosis	IP/MAC conflict detection, LED (power supply, ring and port), RMON, Link Layer Discovery Protocol (LLDP IEEE802.1AB), port mirroring, syslog, virtual cable test (VCT), link check
Setting DHCP client, FTP/TFTP	Console interface, CLI, Web interface, Telnet, DHCP Option 82,
Security	IEEE 802.1X, HTTPS, SSL, SNMP v3, port security (MAC address), TACACS+, access control list (ACL)
Multicast	IGMP Snooping, GMRP, static multicast(MAC address) Max. IGMP quantity: 256
VLAN	VLAN (IEEE802.1Q), PVLAN, GVRP Max. VLAN quantity: 256 VLAN ID: 1~4094
Network quality control	QoS(IEEE802.1p/1Q), TOS(Type of sevice)/DiffServ (Differentiated service), port speed limit, broadcast limiter, flow control(IEEE802.3x), SNTP Priority queue: 4
Power Supply	
Input voltage	24V DC/AC (18~72 VDC / 18~50 VAC)
Connecting terminal	5 pole 5.08mm pitch terminal block
Power consumption	<11.3 W, details on attached type selection table
Protection	Overload voltage protection, reverse polarity protection, redundancy protection

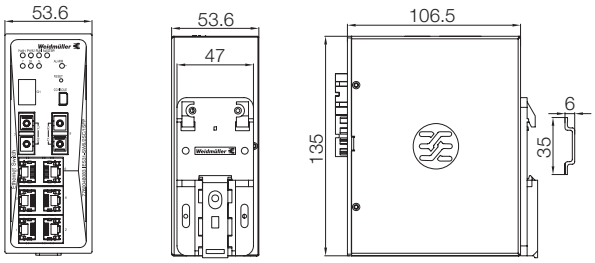
Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	DIN-Rail or wall mounting
Dimensions	Total ports 8 or 9: 53.6mm×135mm×106.5mm (W×H×D) Total ports 18: 88mm×135mm×137mm (W×H×D)
Weight	Total ports 8 or 9: 0.76 kg Total ports 18: 1.25 kg
Environment	
Operation temperature	-40˚C to +85˚C
Storage temperature	-40˚C to +85˚C
Humidity	5%~95% (non-condensing)
MTBF	24.0 ~39.7 years, details on attached type selection table
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz)
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
Railway	EN50155, EN50121-4
Power	IEC61850-3 (pending), IEEE1613 (pending)
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Marine	GL (pending)
Warranty	
Warranty	5 years

IES31 Series Managed Industrial Ethernet Switch, Gigabit uplink

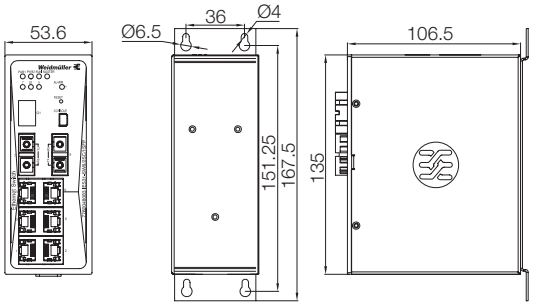
Dimension Drawing

W x H x D: 53.6mm x 135mm x 106.5mm

Din-Rail Mounting Dimensions

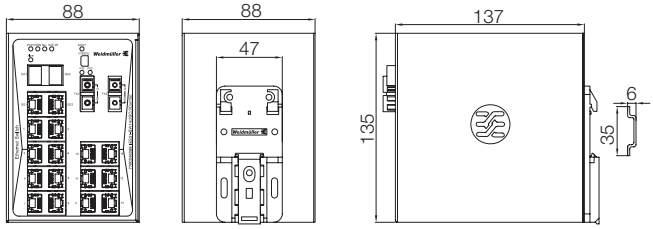


Wall Mounting Dimensions

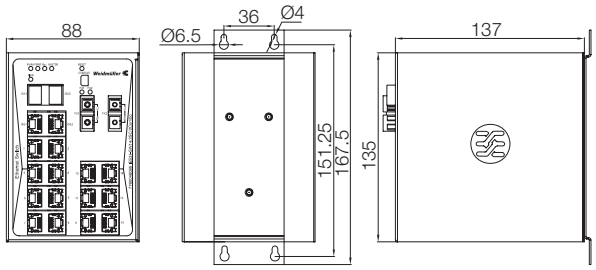


W x H x D: 88mm x 135mm x 137mm

Din-Rail Mounting Dimensions



Wall Mounting Dimensions

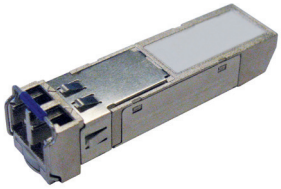


Ordering information

Type	Order No.	Port Qty.	10/100/1000 Base T(X)	1000 Base X Combo	1000 Base X SFP	10/100 Base T(X)	100 Base FX Multimode SC	100 Base FX Singlemode SC	Power Consumption (W)	Dimension (mm) WxHxD	Weight	MTBF (years)
IES31-SW6/2SFP	7760048081	8			2	6			<6.2	53.6×135×106.5	0.76 kg	24.0
IES31-SW6/3SFP	7760048080	9			3	6			<6.2	53.6×135×106.5	0.76 kg	24.0
IES31-SW6/2SC/1SFP	7760048083	9			1	6	2		<6.2	53.6×135×106.5	0.76 kg	39.7
IES31-SW6/2SCS/1SFP	7760048084	9			1	6		2	<6.2	53.6×135×106.5	0.76 kg	39.7
IES31-SW16/2Combo	7760048082	18		2		16			<11.3	88×135×137	1.25 kg	30.3
IES31-SW14/2SC/2Combo	7760048085	18		2		14	2		<11.3	88×135×137	1.25 kg	30.3
IES31-SW14/2SCS/2Combo	7760048086	18		2		14		2	<11.3	88×135×137	1.25 kg	30.3
Dust Cap RJ45												
IE-DPC	8813490000											

* Devices and ST optical fiber connector are on demand. Please see below for SFP transceivers.

SFP transceiver



Type	Order No.	Description
IE-SFP-1G-850-MM	7760048150	Gigabit Ethernet, LC-Connector, distance 550 m multi-mode
IE-SFP-1G-1310-SM10	7760048152	Gigabit Ethernet, LC-Connector, distance 10 km, single-mode
IE-SFP-1G-1550-SM40	7760048155	Gigabit Ethernet, LC-Connector, distance 40 km, single-mode
IE-SFP-1G-1550-SM60	7760048156	Gigabit Ethernet, LC-Connector, distance 60 km, single-mode
IE-SFP-1G-1550-SM80	7760048157	Gigabit Ethernet, LC-Connector, distance 80 km, single-mode
IE-SFP-1G-RJ45-100	7760048158	Gigabit Ethernet, 10/100/1000M auto negotiate RJ45 100m
IE-SFP-F-1310-MM2	7760048159	Fast Ethernet, LC-Connector, distance 2 km, multi-mode
IE-SFP-F-1310-SM10	7760048160	Fast Ethernet, LC-Connector, distance 10 km, single mode

IES41 Series Full Gigabit Managed Industrial Ethernet Switch

- Protection level: IP40
- Operation temperature: -40˚C to +85˚C
- Metal, fanless
- DIN-Rail or wall mounting
- Input voltage: 24V DC/AC (18~72 VDC / 18~50 VAC)

Technical Data

Interface	
RJ45 Gigabit Ethernet port	10/100/1000Base-T(X), Auto-negotiation, Auto-crossing, Full/Half duplex, RJ45 connector; 10/100/1000Base-T(X), 1000Base-X, Combo;
Fibre Optic	10/100/1000Base-T(X), 1000Base-X, SFP
Multi-mode optic fibre	850 nm, 550 m
Single-mode optic fibre	1310 nm, 40 km; 1550 nm, 60 km/80 km (please refer to SFP details on Page A.29)
Console port	Mini USB
Alarm	3 pole 5.08mm pitch terminal block, 220VDC Max, 2A Max, 60W Max
Status indication	Operation LED: Run Alarm LED: Alarm Power LED: PWR1, PWR2 Ring LED: Ring Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Ring, star, line
Redundancy	W-Ring (self-recovery time<20 ms), W-Ring+, MSTP(IEEE802.1s), Link Aggregation Control Protocol (IEEE802.3ad), power supply
Management	Web interface, SNMP v1/v2/v3, W-NetManage, W-NetExplorer
Diagnosis	IP/MAC conflict detection, LED (power supply, ring and port), RMON, Link Layer Discovery Protocol (LLDP IEEE802.1AB), port mirroring, syslog, virtual cable test (VCT), link check
Setting	Console interface, CLI, Web interface, Telnet, DHCP Option 82, DHCP client, FTP/TFTP
Security	IEEE 802.1X, HTTPS, SSL, SNMP v3, port security (MAC address), TACACS+, access control list (ACL)
Multicast	IGMP Snooping, GMRP, static multicast(MAC address) Max. IGMP quantity: 256
VLAN	VLAN (IEEE802.1Q), PVLAN, GVRP Max. VLAN quantity: 256 VLAN ID: 1~4094
Network quality control	QoS(IEEE802.1p/1Q), TOS(Type of sevice)/DiffServ (Differentiated service), port speed limit, broadcast limiter, flow control(IEEE802.3x), SNTP Priority queue: 4
Power Supply	
Input voltage	24V DC/AC (18~72 VDC / 18~50 VAC)
Connecting terminal	5 pole 5.08mm pitch terminal block
Power consumption	<12.9 W
Protection	Overload voltage protection, reverse polarity protection, redundancy protection
Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	DIN-Rail or wall mounting
Dimensions	88mm×135mm×137mm (W×H×D)
Weight	1.25 kg

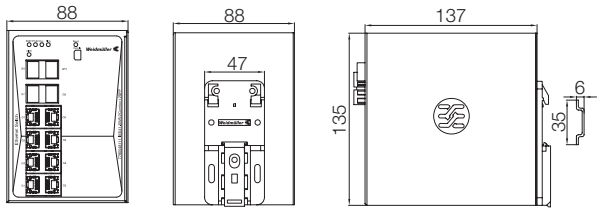
Environment	
Operation temperature	-40˚C to +85˚C
Storage temperature	-40˚C to +85˚C
Humidity	5%~95% (non-condensing)
MTBF	39.4 years
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz)
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
Railway	EN50155, EN50121-4
Power	IEC61850-3 (pending), IEEE1613 (pending)
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Marine	GL (pending)
Warranty	
Warranty	5 years

IES41 Series Full Gigabit Managed Industrial Ethernet Switch

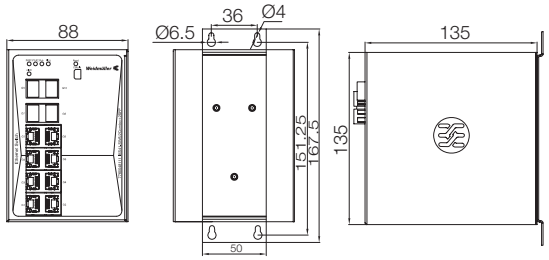
Dimension Drawing

W x H x D: 88mm x 135mm x 137mm

Din-Rail Mounting Dimensions



Wall Mounting Dimensions

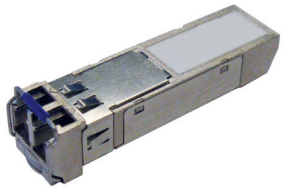


Ordering information

Type	Order No.	Port Qty.	10/100/1000Base T(X)	1000Base X		Power (W) Consumption (W)	Dimension (mm) (W×H×D)	Weight	MTBF (years)
				Combo	SFP				
IES41-SW6/2Combo	7760048110	8	6	2		<12.9	88×135×137	1.25 kg	39.4
IES41-SW6/2Combo+2SFP	7760048111	10	6	2	2	<12.9	88×135×137	1.25 kg	39.4
Dust Cap RJ45									
IE-DPC	8813490000								

* Devices and ST optical fiber connector are on demand. Please see below for SFP transceivers.

SFP transceiver



Type	Order No.	Description
IE-SFP-1G-850-MM	7760048150	Gigabit Ethernet, LC-Connector, distance 550 m multi-mode
IE-SFP-1G-1310-SM10	7760048152	Gigabit Ethernet, LC-Connector, distance 10 km, single-mode
IE-SFP-1G-1550-SM40	7760048155	Gigabit Ethernet, LC-Connector, distance 40 km, single-mode
IE-SFP-1G-1550-SM60	7760048156	Gigabit Ethernet, LC-Connector, distance 60 km, single-mode
IE-SFP-1G-1550-SM80	7760048157	Gigabit Ethernet, LC-Connector, distance 80 km, single-mode
IE-SFP-1G-RJ45-100	7760048158	Gigabit Ethernet, 10/100/1000M auto negotiate RJ45 100m
IE-SFP-F-1310-MM2	7760048159	Fast Ethernet, LC-Connector, distance 2 km, multi-mode
IE-SFP-F-1310-SM10	7760048160	Fast Ethernet, LC-Connector, distance 10 km, single mode

IES1000 Series Simple Managed Industrial Ethernet Rack Switch

- Protection level: IP40
- Operation temperature: 0˚C to +60˚C
- Metal, fanless
- 1U 19" rack mounting
- Input voltage: 220V AC/DC (85~264 VAC / 120~370 VDC)

Technical Data

Interface	
RJ45 Fast Ethernet port	10/100Base-T(X), auto-negotiation, auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic Multi-mode optic fibre	100Base-FX, multimode, SC connector 1310 nm, 5 km
Console port	RJ45 interface (COM protocol)
Alarm	3 pole 3.81mm pitch terminal block, 250VAC/350VDC Max, 120mA Max
Status indication	Operation LED: Run Alarm LED: Alarm Power LED: PWR Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Star, line
Management	Web interface, SNMP v1/v2/v3, W-NetManager, W-NetExplorer
Diagnosis	LED (power supply and port), RMON, Link Layer Discovery Protocol(LLDP IEEE802.1AB)
Setting	Console interface, CLI, Web interface, Telnet, FTP/TFTP
Security	SNMP v3
Multicast	IGMP Snooping, GMRP, static multicast(MAC address) Max. IGMP quantity: 256
VLAN	VLAN (IEEE802.1Q), PVLAN Max. VLAN quantity: 256 VLAN ID: 1~4093
Network quality control	QoS(IEEE802.1p/1Q), TOS(Type of sevice)/ DiffServ(Differentiated service), port speed limit, broadcast limiter, flow control(IEEE802.3x) Priority queue: 4
Power Supply	
Input voltage	220V AC/DC (85~264 VAC / 120~370 VDC)
Connecting terminal	3 pole 9.5mm pitch terminal block
Power consumption	<14.3W, details on attached type selection table
Protection	Overload voltage protection, reverse polarity protection
Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	1U 19"rack mounting
Dimensions	482.6mm×44mm×185mm (W×H×D)
Weight	3.5 kg
Environment	
Operation temperature	0˚C to +60˚C
Storage temperature	-40˚C to +85˚C
Humidity	5%~95% (non-condensing)
MTBF	22.8 years

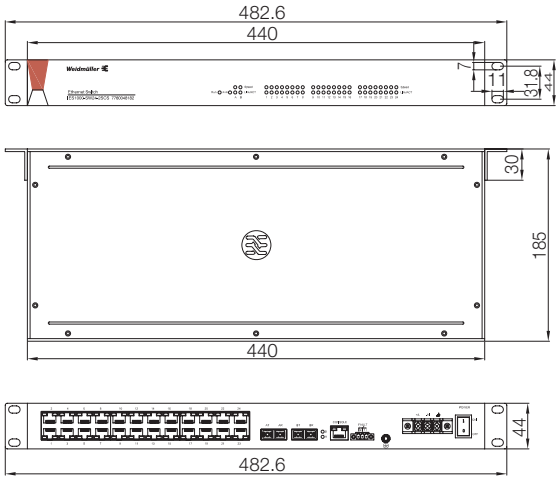
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz)
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Warranty	
Warranty	5 years

* Rack Switches available early 2013

IES1000 Series Simple Managed Industrial Ethernet Rack Switch

Dimension Drawing

W x H x D: 482.6mm x 44mm x 185mm



Ordering information

Type	Order No.	Port Qty.	10/100 Base T(X)	100Base FX Multimode SC	Power Consumption (W)	Dimension(mm) (W×H×D)	Weight	MTBF (years)
IES1000-SW24	7760048180	24	24		<14.3	482.6×44×185	2 kg	22.8
IES1000-SW24/2SC	7760048181	26	24	2	<14.3	482.6×44×185	2 kg	22.8
Dust Cap RJ45								
IE-DPC	8813490000							

* Devices with SC single-mode optical fiber connector are on demand.

IEMS2000 Series Gigabit Modular Layer 2 Industrial Ethernet Switch

- Protection level: IP40
- Operation temperature: -40˚C to +85˚C
- Metal, fanless
- 1U 19" rack mounting
- Input voltage: 48V DC (36~72 VDC), 220V AC/DC (85~264 VAC / 77~370 VDC)

Technical Data

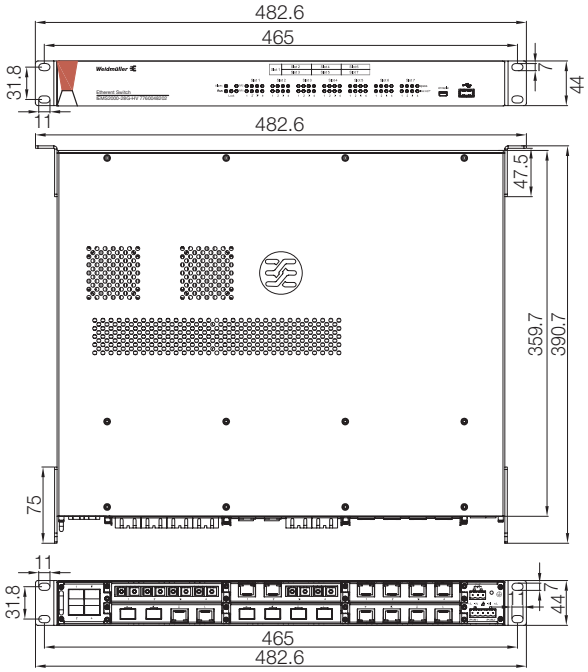
Interface	
RJ45 Gigabit Ethernet port	10/100/1000Base-T(X), Auto-negotiation, Auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic Multi-mode optic fibre Single-mode optic fibre	10/100/1000Base-T(X), 1000Base-X, SFP Gigabit Ethernet: 850 nm, 550 m Gigabit Ethernet: 1310 nm, 10 km/40 km; 1550 nm, 60 km/80 km (please refer to SFP details on page A.33)
RJ45 Fast Ethernet port	10/100Base-T(X), auto-negotiation, auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic Multi-mode optic fibre Single-mode optic fibre	100Base-FX, singlemode/multimode, SC/ST connector Fast Ethernet: 1310 nm, 5 km Fast Ethernet: 1310 nm, 40 km
Console port	Mini USB
Modular slot	1 x 1U height slot and 6 x 0.5U height slots
Alarm	3 pole 5.08mm pitch terminal block, 220VDC Max, 2A Max, 60W Max
Status indication	LEDs on front panel Operation LED: Run Alarm LED: Alarm Power LED: PWR1, PWR2 Port LED: Link/ACT, Speed LEDs on rear panel Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Ring, star, line
Redundancy Aggregation	W-Ring (self-recovery time<20 ms), W-Ring+, MSTP(IEEE802.1s), Link Control Protocol (IEEE802.3ad), power supply
Management	Web interface, SNMP v1/v2/v3, W-NetManager, W-NetExplorer
Diagnosis ing, syslog,	IP/MAC conflict detection, LED (power supply, ring and port), RMON, Link Layer Discovery Protocol (LLDP IEEE802.1AB), port mirror-virtual cable test (VCT), link check
Setting	Console interface, CLI, Web interface, Telnet, DHCP Option 82, DHCP client, FTP/TFTP
Security	IEEE 802.1X, HTTPS, SSH, SSL, SNMP v3, port security (MAC address), TACACS+, RADIUS, access control list (ACL)
Multicast	IGMP Snooping, GMRP, static multicast(MAC address) Max. IGMP quantity: 256
VLAN	VLAN (IEEE802.1Q), PVLAN, GVRP Max. VLAN quantity: 256 VLAN ID: 1~4093
Network quality control	QoS(IEEE802.1p/1Q), TOS(Type of sevice)/DiffServ (Differentiated service), port speed limit, broadcast limiter, flow control(IEEE802.3x), SNTP Priority queue: 4
Power Supply	
Input voltage	48V DC (36~72 VDC), 220V AC/DC (85~264 VAC / 77~370 VDC)
Connecting terminal	5 pole 5.08mm pitch terminal block
Power consumption	<33.5
Protection	Overload voltage protection, reverse polarity protection, redundancy protection

Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	1U 19" rack mounting
Dimensions	440mm×44mm×360mm (W×H×D)
Weight	<10 kg
Environment	
Operation temperature	-40˚C to +85˚C
Storage temperature	-40˚C to +85˚C
Humidity	5%~95% (non-condensing)
MTBF	41.1 years
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz); IEC61000-4-8 Power frequency magnetic field: 100A/m (cont.), 1000A/m(1s~3s); IEC61000-4-9 Pulse magnetic field: 1000A/m; IEC61000-4-10 Damped oscillatory: 100A/m; IEC61000-4-12 Oscillatory waves: DC/AC power port: 2.5kV/CM, 1kV/DM
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
Railway	EN50155, EN50121-4
Power	IEC61850-3 (pending), IEEE1613 (pending)
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Warranty	
Warranty	5 years

* Rack Switches available early 2013

IEMS2000 Series Gigabit Modular Layer 2 Industrial Ethernet Switch

Dimension Drawing



Ordering Information

Type	Order No.	Description	Slot Qty.		Power supply	Support PTP?	Power consumption
			1 U height	0.5 U height			
IEMS2000-4G+24-HV	7760048200	Gigabit uplink	1	6	220V AC/DC	No	<33.5W
IEMS2000-4G+24	7760048201	Gigabit uplink	1	6	48V DC	No	<33.5W
IEMS2000-28G-HV	7760048202	Full gigabit	1	6	220V AC/DC	No	<33.5W
IEMS2000-28G	7760048203	Full gigabit	1	6	48V DC	No	<33.5W
Dust Cap RJ45							
IE-DPC	8813490000						

Modules

Type	Order No.	Description	Gigabit Ethernet port Qty.		Fast Ethernet port Qty.		Applicable types
			1000BaseT	SFP	100BaseT(X)	100BaseFX	
RM-4G	7760048260	Data module 0.5 U height	4	-	-	-	Full gigabit
RM-4SFP	7760048261	Data module 0.5 U height	-	4	-	-	Full gigabit
RM-2G/2SFP	7760048262	Data module 0.5 U height	2	2	-	-	Full gigabit
RM-2SC/2SFP	7760048263	Data module 0.5 U height	-	2	-	2 SC	Full gigabit
RM-2SCS/2SFP	7760048264	Data module 0.5 U height	-	2	-	2 SCS	Full gigabit
RM-2ST/2SFP	7760048265	Data module 0.5 U height	-	2	-	2 ST	Full gigabit
RM-2STS/2SFP	7760048266	Data module 0.5 U height	-	2	-	2 STS	Full gigabit
RM-4T	7760048267	Data module 0.5 U height	-	-	4	-	All types
RM-4SC	7760048268	Data module 0.5 U height	-	-	-	4 SC	All types
RM-4SCS	7760048269	Data module 0.5 U height	-	-	-	4 SCS	All types
RM-4ST	7760048270	Data module 0.5 U height	-	-	-	4 ST	All types
RM-4STS	7760048271	Data module 0.5 U height	-	-	-	4 STS	All types
RM-2T/2SC	7760048272	Data module 0.5 U height	-	-	2	2 SC	All types
RM-2T/2SCS	7760048273	Data module 0.5 U height	-	-	2	2 SCS	All types
RM2-4G	7760048279	Data module 1 U height	4	-	-	-	All types
RM2-4SFP	7760048280	Data module 1 U height	-	4	-	-	All types
RM2-2G/2SFP	7760048281	Data module 1 U height	2	2	-	-	All types

* Please see below for SFP transceivers.

SFP transceiver

Type	Order No.	Description
IE-SFP-1G-850-MM	7760048150	Gigabit Ethernet, LC-Connector, distance 550 m multi-mode
IE-SFP-1G-1310-SM10	7760048152	Gigabit Ethernet, LC-Connector, distance 10 km, single-mode
IE-SFP-1G-1550-SM40	7760048155	Gigabit Ethernet, LC-Connector, distance 40 km, single-mode
IE-SFP-1G-1550-SM60	7760048156	Gigabit Ethernet, LC-Connector, distance 60 km, single-mode
IE-SFP-1G-1550-SM80	7760048157	Gigabit Ethernet, LC-Connector, distance 80 km, single-mode
IE-SFP-1G-RJ45-100	7760048158	Gigabit Ethernet, 10/100/1000M auto negotiate RJ45 100m
IE-SFP-F-1310-MM2	7760048159	Fast Ethernet, LC-Connector, distance 2 km, multi-mode
IE-SFP-F-1310-SM10	7760048160	Fast Ethernet, LC-Connector, distance 10 km, single mode

IEMS2000T Series Gigabit Modular Layer 2 PTP Industrial Ethernet Switch

- Protection level: IP40
- Operation temperature: -40˚C to +85˚C
- Metal, fanless
- 1U 19" rack mounting
- Input voltage: 48V DC (36~72 VDC), 220V AC/DC (85~264 VAC / 77~370 VDC)

Technical Data

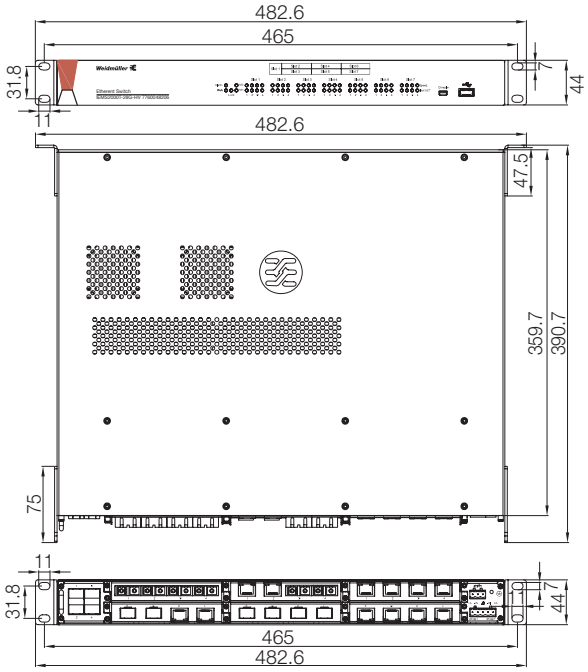
Interface	
RJ45 Gigabit Ethernet port	10/100/1000Base-T(X), Auto-negotiation, Auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic Multi-mode optic fibre Single-mode optic fibre	10/100/1000Base-T(X), 1000Base-X, SFP Gigabit Ethernet: 850 nm, 550 m Gigabit Ethernet: 1310 nm, 10 km/40 km; 1550 nm, 60 km/80 km (please refer to SFP details on page A.35)
RJ45 Fast Ethernet port	10/100Base-T(X), auto-negotiation, auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic Multi-mode optic fibre Single-mode optic fibre	100Base-FX, singlemode/multimode, SC/ST connector Fast Ethernet: 1310 nm, 5 km Fast Ethernet: 1310 nm, 40 km
Console port	Mini USB
Modular slot	1 x 1U height slot and 6 x 0.5U height slots
Alarm	3 pole 5.08mm pitch terminal block, 220VDC Max, 2A Max, 60W Max
Status indication	LEDs on front panel Operation LED: Run Alarm LED: Alarm Power LED: PWR1, PWR2 Port LED: Link/ACT, Speed LEDs on rear panel Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Ring, star, line
Redundancy	W-Ring (self-recovery time<20 ms), W-Ring+, MSTP(IEEE802.1s), Link Aggregation Control Protocol (IEEE802.3ad), power supply
Management	Web interface, SNMP v1/v2/v3, W-NetManager, W-NetExplorer
Diagnosis	IP/MAC conflict detection, LED (power supply, ring and port), RMON, Link Layer Discovery Protocol (LLDP IEEE802.1AB), port mirroring, syslog, virtual cable test (VCT), link check
Setting	Console interface, CLI, Web interface, Telnet, DHCP Option 82, DHCP client, FTP/TFTP
Security	IEEE 802.1X, HTTPS, SSH, SSL, SNMP v3, port security (MAC address), TACACS+, RADIUS, access control list (ACL)
Multicast	IGMP Snooping, GMRP, static multicast(MAC address) Max. IGMP quantity: 256
VLAN	VLAN (IEEE802.1Q), PVLAN, GVRP Max. VLAN quantity: 4093 VLAN ID: 1~4093
Network quality control	QoS(IEEE802.1p/1Q), TOS(Type of sevice)/DiffServ (Differentiated service), port speed limit, broadcast limiter, flow control(IEEE802.3x), SNTP, IEEE1588 v2 Priority queue: 4
Power Supply	
Input voltage	48V DC (36~72 VDC), 220V AC/DC (85~264 VAC / 77~370 VDC)
Connecting terminal	5 pole 5.08mm pitch terminal block
Power consumption	<33.5W
Protection	Overload voltage protection, reverse polarity protection, redundancy protection

Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	1U 19" rack mounting
Dimensions	440mm×44mm×360mm (W×H×D)
Weight	<10 kg
Environment	
Operation temperature	-40˚C to +85˚C
Storage temperature	-40˚C to +85˚C
Humidity	5%~95% (non-condensing)
MTBF	40.1 years
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz)
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
Railway	EN50155, EN50121-4
Power	IEC61850-3 (pending), IEEE1613 (pending)
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Warranty	
Warranty	5 years

* Rack Switches available early 2013

IEMS2000T Series Gigabit Modular Layer 2 PTP Industrial Ethernet Switch

Dimension Drawing



Ordering Information

Type	Order No.	Description	Slot Qty.		Power supply	Support PTP?	Power consumption
			1 U height	0.5 U height			
IEMS2000T-4G+24-HV	7760048204	Gigabit uplink	1	6	220V AC/DC	Yes	<33.5 W
IEMS2000T-4G+24	7760048205	Gigabit uplink	1	6	48V DC	Yes	<33.5 W
IEMS2000T-28G-HV	7760048206	Full gigabit	1	6	220V AC/DC	Yes	<33.5 W
IEMS2000T-28G	7760048207	Full gigabit	1	6	48V DC	Yes	<33.5 W
Dust Cap RJ45							
IE-DPC	8813490000						

Modules

Type	Order No.	Description	Gigabit Ethernet port Qty.		Fast Ethernet port Qty.		Applicable types
			1000BaseT	SFP	100BaseT(X)	100BaseFX	
RM-4G	7760048260	Data module 0.5 U height	4	-	-	-	Full gigabit
RM-4SFP	7760048261	Data module 0.5 U height	-	4	-	-	Full gigabit
RM-2G/2SFP	7760048262	Data module 0.5 U height	2	2	-	-	Full gigabit
RM-2SC/2SFP	7760048263	Data module 0.5 U height	-	2	-	2 SC	Full gigabit
RM-2SCS/2SFP	7760048264	Data module 0.5 U height	-	2	-	2 SCS	Full gigabit
RM-2ST/2SFP	7760048265	Data module 0.5 U height	-	2	-	2 ST	Full gigabit
RM-2STS/2SFP	7760048266	Data module 0.5 U height	-	2	-	2 STS	Full gigabit
RM-4T	7760048267	Data module 0.5 U height	-	-	4	-	All types
RM-4SC	7760048268	Data module 0.5 U height	-	-	-	4 SC	All types
RM-4SCS	7760048269	Data module 0.5 U height	-	-	-	4 SCS	All types
RM-4ST	7760048270	Data module 0.5 U height	-	-	-	4 ST	All types
RM-4STS	7760048271	Data module 0.5 U height	-	-	-	4 STS	All types
RM-2T/2SC	7760048272	Data module 0.5 U height	-	-	2	2 SC	All types
RM-2T/2SCS	7760048273	Data module 0.5 U height	-	-	2	2 SCS	All types
RM2-4G	7760048279	Data module 1 U height	4	-	-	-	All types
RM2-4SFP	7760048280	Data module 1 U height	-	4	-	-	All types
RM2-2G/2SFP	7760048281	Data module 1 U height	2	2	-	-	All types

* Please see below for SFP transceivers.

SFP transceiver

Type	Order No.	Description
IE-SFP-1G-850-MM	7760048150	Gigabit Ethernet, LC-Connector, distance 550 m multi-mode
IE-SFP-1G-1310-SM10	7760048152	Gigabit Ethernet, LC-Connector, distance 10 km, single-mode
IE-SFP-1G-1550-SM40	7760048155	Gigabit Ethernet, LC-Connector, distance 40 km, single-mode
IE-SFP-1G-1550-SM60	7760048156	Gigabit Ethernet, LC-Connector, distance 60 km, single-mode
IE-SFP-1G-1550-SM80	7760048157	Gigabit Ethernet, LC-Connector, distance 80 km, single-mode
IE-SFP-1G-RJ45-100	7760048158	Gigabit Ethernet, 10/100/1000M auto negotiate RJ45 100m
IE-SFP-F-1310-MM2	7760048159	Fast Ethernet, LC-Connector, distance 2 km, multi-mode
IE-SFP-F-1310-SM10	7760048160	Fast Ethernet, LC-Connector, distance 10 km, single mode

Industrial Routers

The gateways between Ethernet worlds

Separation of Ethernet networks in the factory

An industrial manufacturing network or an industrial machine network and a typical office network use the same Ethernet standard but are nevertheless totally different. Where as in the office network larger volumes of data and the associated sluggishness of the network is completely acceptable, however an excessively long response time in an industrial network can lead to downtimes and malfunctions. Complete isolation of the two networks is innapropriate, and for the first time there is the chance of using the same network for all procedures in the company. Procedures become more transparent, the management and technical workloads can be reduced. The exchange of data is considerably simplified and decidedly more efficient. There are many options for isolating and prioritising network data, e.g. VLAN, QoS for layer 2, etc. A router can filter the data from the office and provide added features such as integrated firewall, Network Address Translation (NAT), Port Address Translation (PAT) and remote access via a Modem that turns such a router into an efficient aid for achieving separation between networks.

Only authorised users can access the protected network from outside and only certain, enabled devices can transmit data out of the protected network. The NAT/PAT feature enables a machine with its own IP subnetwork and several network users to remain concealed from the outside world behind a unique IP address. Access routines to the IP address from outside are automatically forwarded to a predefined IP address in the network behind the router. In this way the device can remain accessible from outside but only as required. The option of concealing a complete machine behind an IP address reduces the installation and management workloads for the machine user. In addition, the router can be selected via an external modem, thus enabling access to the router and the machine beyond, without compromising the corporate network. Such access routines are carried out via PPP and PAP or Call back with Virtual Private Network (VPN). This means that a high security level can always be guaranteed.
Connection to the Internet

Weidmuller's Industrial routers are available in stand alone Din Rail mount in Full Gigabit pass through with the option of UMTS (3G) quad band connection for remote sites, or as a technician connection, or as a 19" rack module for whole of plant communication and control over 3000 IP addresses.

All models can communicate to external dial up or ADSL modems for connection to the Internet providing packet and traffic filtering and security tasks. All models provide remote monitoring utilising latest techniques allowing engineers and IT Proffessionals acces to remote or locat routers for adjustment, configuration and monitoring.

The typical applications for routers are

- To separate Ethernet networks for data security
- To separate Ethernet networks for different subnets
- To separate factory networks from office networks for reliability
- To allow System integrators remote access without access to the corporate network
- To enable an Internet link

Industrial Gigabit Router with 3G

- Gigabit LAN router with UMTS (3G) option
- -20-+70C operation
- Sim Card reader for configuration and backup
- Pre-configured rules for Modbus TCP

Technical Data

Modes	
IP-Router	Static or dynamic routing, supporting RIPv2 / OSPF
Transparent Bridge	2-port switch with additional layer-2 filter

Network Services	
	• DHCP server / DHCP relay • DNS relay • NTP client • DynDNS (DHCP client by RFC 2136)

Firewall	
	• IPv4 Stateful inspection Firewall (incoming/outgoing) • NAT-Masquerading, 1:1 NAT, Portforwarding • Layer-2/3-Filter (VLAN ID, VLAN, QoS day, MAC address, Ethertype frame) • "Auto learning" feature to create packet filter rules (analysis of network traffic) • Layer 2/3-based packet prioritization (Ethernet frame, IP header, VLAN tag)

VPN	
OpenVPN	• Configurable as OpenVPN server or client (Layer 2 and Layer 3) • Authentication with X.509 Certificates • Tunnel support via HTTP proxy • Maximum of 10 different client or server configurations • Unlimited number of client connections in server mode
IPsec	• Can be configured as an IPsec server or client • PSK authentication (user ID, password) or X.509 certificates • Hardware-based encryption for faster data throughput • A maximum of 64 simultaneous connections (subnet to subnet or as an IPsec server) • Encryption algorithms DES-56, 3DES-168, AES 128, AES 192, AES-256

Management	
	• Configuration via WEB interface (HHTP / HTTPS) • Voice interface in German or English • Configuration support through detailed help information (tooltip) • Configurable multi-user access with definable rights mask • Support of SNMP v1/v2/v3, event log / syslog

Other	
Modbus/TCP	Integrated Modbus TCP Server for status queries, and software-based activation / de-activation of VPN connections
Diagnosis	"Remote Capture" feature for network diagnostics via a connected PC (Wireshark)
Monitoring	Client Monitoring (via ICMP) with alarm function in case of error

Interfaces	
RJ45 ports	2 x 10/100/1000BaseT(X)
USB port	Option for future expansion
SCM card reader	Save and restore of the configuration using a smart card (memory chip)
LED indicators	Signaling states for power, status, cut, alert, active VPN connection and an active
Digital outputs	• "Alarm" –> Indicates a configurable network status or error (24V out) • "VPN-active" –> Indicates an active VPN connection (24 V out)
Digital inputs	• "Cut" –> Disconnects physically (link down) the WAN port (24 V) • "VPN-initiate" –> Enables a pre-configured VPN connection (24 V)
Reset button	Restoring the factory default

Power	
Input Voltage	1 x 24 V DC (7 to 36 volts)
Current consumption	max. 600 mA @ 24 V DC

Technical data (housing)	
Housing	Metal, IP20
Dimensions (W x H x D)	35 x 159 x 134 mm (without antenna) 35 x 255 x 134 mm (with UMTS antenna)
Assembly	TS35

Environmental conditions	
Operating temperature	–20 °C to +70 °C
Storage temperature	–20 °C to +85 °C
Ambient humidity	6 to 90 % not condensing

DSL and UMTS/HSPA	
DSL	Connection to the DSL modem via LAN or WAN port Free configuration of the PPPoE login
DynDNS	Support automatic registration
UMTS/3G	• Built-in quad-band UMTS / HSPA modem (only variant IE-SR-2GT-UMTS/3G) • 7.2 Mbps peak downlink, uplink 8.5 Mbps peak • WCDMA 850/1900/2100 MHz GSM/GPRS/EDGE 850/900/1800/1900 MHz • FCC, IC, CE, GCF, PTCRB, A-Tick, AT&T, Telstra, NTT, DoCoMo, Softbank, Bell

Approvals	
Security	UL508 (in preparation)
EMV	FCC Part 15 Class A, EN 55022 Class A, EN61000-4-2 (ESD), EN61000-4-3 (RS) EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS)
Shock	DIN EN 60068-2-27
Vibration	DIN EN 60068-2-6

Warranty	
Period of time	3 years

Ordering Information

Models	Type	Order Code
LAN/WAN router	IE-SR-2GT-LAN	**1345270000**
LAN/WAN router with integrated modem UMTS/3G	IE-SR-2GT-UMTS/3G	**1345250000**

* Available 2nd quarter 2013

IEMS3000 Series Gigabit Modular Layer 3 Industrial Ethernet Switch

- Protection level: IP40
- Operation temperature: -40˚C to +85˚C
- Metal, fanless
- 1U 19" rack mounting
- Input voltage: 48V DC (36~72 VDC), 220V AC/DC (85~264 VAC / 77~370 VDC)

Technical Data

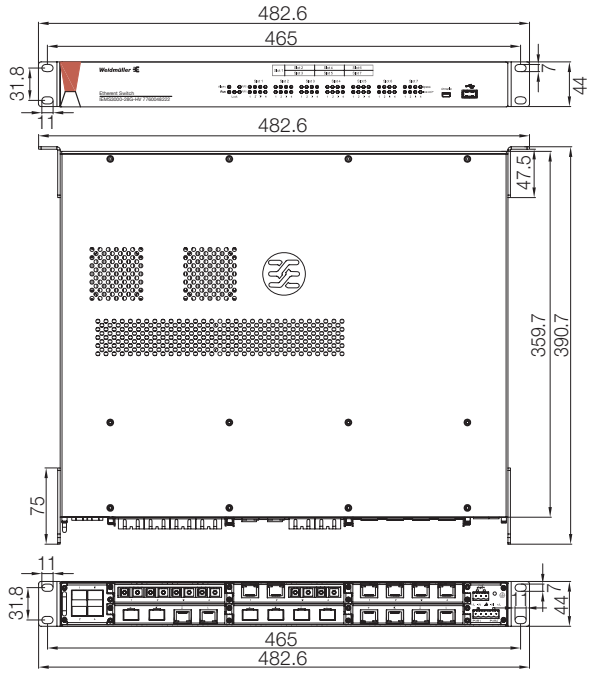
Interface	
RJ45 Gigabit Ethernet port	10/100/1000Base-T(X), Auto-negotiation, Auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic Multi-mode optic fibre Single-mode optic fibre	10/100/1000Base-T(X), 1000Base-X, SFP Gigabit Ethernet: 850 nm, 550 m Gigabit Ethernet: 1310 nm, 10 km/40 km; 1550 nm, 60 km/80 km (please refer to SFP details on page A.39)
RJ45 Fast Ethernet port	10/100Base-T(X), auto-negotiation, auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic Multi-mode optic fibre Single-mode optic fibre	100Base-FX, singlemode/multimode, SC/ST connector Fast Ethernet: 1310 nm, 5 km Fast Ethernet: 1310 nm, 40 km
Console port	Mini USB
Modular slot	1 x 1U height slot and 6 x 0.5U height slots
Alarm	3 pole 5.08mm pitch terminal block, 220VDC Max, 2A Max, 60W Max
Status indication	LEDs on front panel Operation LED: Run Alarm LED: Alarm Power LED: PWR1, PWR2 Port LED: Link/ACT, Speed LEDs on rear panel Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Ring, star, line
Redundancy	W-Ring (self-recovery time < 20 ms), W-Ring+, MSTP(IEEE802.1s), Link Aggregation Control Protocol (IEEE802.3ad), VRRP, power supply
Management	Web interface, SNMP v1/v2/v3, W-NetManager, W-NetExplorer
Diagnosis	IP/MAC conflict detection, LED (power supply, ring and port), RMON, Link Layer Discovery Protocol (LLDP IEEE802.1AB), port mirroring, syslog, virtual cable test (VCT), link check
Setting	Console interface, CLI, Web interface, Telnet, DHCP Option 82, DHCP client, FTP/TFTP
Security	IEEE 802.1X, HTTPS, SSH, SSL, SNMP v3, TACACS+, RADIUS, access control list (ACL)
Multicast	IGMP, IGMP Snooping, GMRP, PIM-SM, PIM-DM, DVMRP Max. IGMP quantity: 256
Routing	RIP v1/v2, OSPF v2, BGP v4, static routing
VLAN	VLAN (IEEE802.1Q), PVLAN, GVRP Max. VLAN quantity: 4093 VLAN ID: 1~4093
Network quality control	QoS(IEEE802.1p/1Q), TOS(Type of sevice)/DiffServ (Differentiated service), port speed limit, broadcast limiter, flow control(IEEE802.3x), SNTP Priority queue: 8
Power Supply	
Input voltage	48V DC (36~72 VDC), 220V AC/DC (85~264 VAC / 77~370 VDC)
Connecting terminal	5 pole 5.08mm pitch terminal block
Power consumption	<33.5 W
Protection	Overload voltage protection, reverse polarity protection, redundancy protection

Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	1U 19" rack mounting
Dimensions	482.6mm×44mm×360mm (W×H×D)
Weight	<10 kg
Environment	
Operation temperature	-40˚C to +85˚C
Storage temperature	-40˚C to +85˚C
Humidity	5%~95% (non-condensing)
MTBF	42.0 years
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz); IEC61000-4-8 Power frequency magnetic field: 100A/m (cont.), 1000A/m(1s~3s); IEC61000-4-9 Pulse magnetic field: 1000A/m; IEC61000-4-10 Damped oscillatory: 100A/m; IEC61000-4-12 Oscillatory waves: DC/AC power port: 2.5kV/CM, 1kV/DM
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
Railway	EN50155, EN50121-4
Power	IEC61850-3 (pending), IEEE1613 (pending)
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Warranty	
Warranty	5 years

* Rack Switches available early 2013

IEMS3000 Series Gigabit Modular Layer 3 Industrial Ethernet Switch

Dimension Drawing



Ordering Information

Type	Order No.	Description	Slot Qty.		Power supply	Support PTP?	Power consumption
			1 U height	0.5 U height			
IEMS3000-4G+24-HV	7760048220	Gigabit uplink	1	6	220V AC/DC	No	<33.5 W
IEMS3000-4G+24	7760048221	Gigabit uplink	1	6	48V DC	No	<33.5 W
IEMS3000-28G-HV	7760048222	Full gigabit	1	6	220V AC/DC	No	<33.5 W
IEMS3000-28G	7760048223	Full gigabit	1	6	48V DC	No	<33.5 W
Dust Cap RJ45							
IE-DPC	8813490000						

Modules

Type	Order No.	Description	Gigabit Ethernet port Qty.		Fast Ethernet port Qty.		Applicable types
			1000BaseT	SFP	100BaseT(X)	100BaseFX	
RM-4G	7760048260	Data module 0.5 U height	4	-	-	-	Full gigabit
RM-4SFP	7760048261	Data module 0.5 U height	-	4	-	-	Full gigabit
RM-2G/2SFP	7760048262	Data module 0.5 U height	2	2	-	-	Full gigabit
RM-2SC/2SFP	7760048263	Data module 0.5 U height	-	2	-	2 SC	Full gigabit
RM-2SCS/2SFP	7760048264	Data module 0.5 U height	-	2	-	2 SCS	Full gigabit
RM-2ST/2SFP	7760048265	Data module 0.5 U height	-	2	-	2 ST	Full gigabit
RM-2STS/2SFP	7760048266	Data module 0.5 U height	-	2	-	2 STS	Full gigabit
RM-4T	7760048267	Data module 0.5 U height	-	-	4	-	All types
RM-4SC	7760048268	Data module 0.5 U height	-	-	-	4 SC	All types
RM-4SCS	7760048269	Data module 0.5 U height	-	-	-	4 SCS	All types
RM-4ST	7760048270	Data module 0.5 U height	-	-	-	4 ST	All types
RM-4STS	7760048271	Data module 0.5 U height	-	-	-	4 STS	All types
RM-2T/2SC	7760048272	Data module 0.5 U height	-	-	2	2 SC	All types
RM-2T/2SCS	7760048273	Data module 0.5 U height	-	-	2	2 SCS	All types
RM2-4G	7760048279	Data module 1 U height	4	-	-	-	All types
RM2-4SFP	7760048280	Data module 1 U height	-	4	-	-	All types
RM2-2G/2SFP	7760048281	Data module 1 U height	2	2	-	-	All types

* Please see below for SFP transceivers.

SFP transceiver

Type	Order No.	Description
IE-SFP-1G-850-MM	7760048150	Gigabit Ethernet, LC-Connector, distance 550 m multi-mode
IE-SFP-1G-1310-SM10	7760048152	Gigabit Ethernet, LC-Connector, distance 10 km, single-mode
IE-SFP-1G-1550-SM40	7760048155	Gigabit Ethernet, LC-Connector, distance 40 km, single-mode
IE-SFP-1G-1550-SM60	7760048156	Gigabit Ethernet, LC-Connector, distance 60 km, single-mode
IE-SFP-1G-1550-SM80	7760048157	Gigabit Ethernet, LC-Connector, distance 80 km, single-mode
IE-SFP-1G-RJ45-100	7760048158	Gigabit Ethernet, 10/100/1000M auto negotiate RJ45 100m
IE-SFP-F-1310-MM2	7760048159	Fast Ethernet, LC-Connector, distance 2 km, multi-mode
IE-SFP-F-1310-SM10	7760048160	Fast Ethernet, LC-Connector, distance 10 km, single mode

IEMS3000T Series Gigabit Modular Layer 3 PTP Industrial Ethernet Switch

- Protection level: IP40
- Operation temperature: -40˚C to +85˚C
- Metal, fanless
- 1U 19" rack mounting
- Input voltage: 48V DC (36~72 VDC), 220V AC/DC (85~264 VAC / 77~370 VDC)

Technical Data

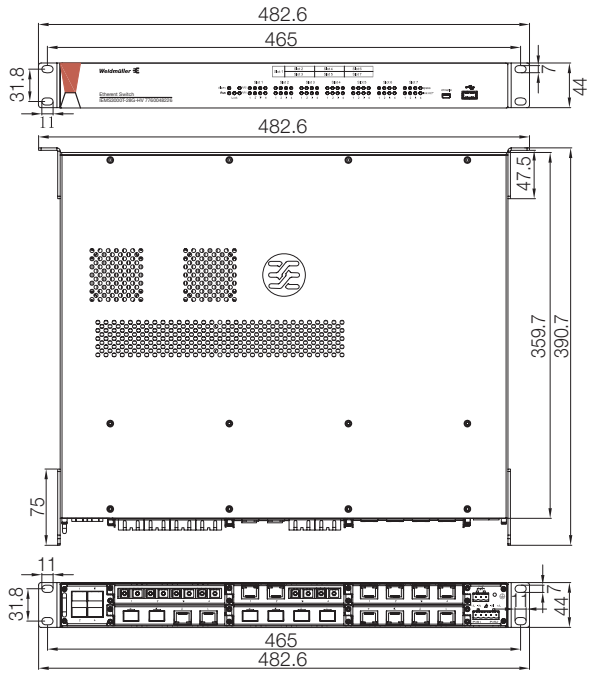
Interface	
Gigabit Ethernet port	10/100/1000Base-T(X), Auto-negotiation, Auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic Multi-mode optic fibre Single-mode optic fibre	10/100/1000Base-T(X), 1000Base-X, SFP Gigabit Ethernet: 850 nm, 550 m Gigabit Ethernet: 1310 nm, 10 km/40 km; 1550 nm, 60 km/80 km (please refer to SFP details on page A.41)
Fast Ethernet port	10/100Base-T(X), auto-negotiation, auto-crossing, Full/Half duplex, RJ45 connector;
Fibre Optic Multi-mode optic fibre Single-mode optic fibre	100Base-FX, singlemode/multimode, SC/ST connector Fast Ethernet: 1310 nm, 5 km Fast Ethernet: 1310 nm, 40 km
Console port	Mini USB
Modular slot	1 x 1U height slot and 6 x 0.5U height slots
Alarm	3 pole 5.08mm pitch terminal block, 220VDC Max, 2A Max, 60W Max
Status indication	LEDs on front panel Operation LED: Run Alarm LED: Alarm Power LED: PWR1, PWR2 Port LED: Link/ACT, Speed LEDs on rear panel Port LED: Link/ACT, Speed (RJ45 port)
Functional Characteristics	
Network structure	Ring, star, line
Redundancy	W-Ring (self-recovery time < 20 ms), W-Ring+, MSTP(IEEE802.1s), Link Aggregation Control Protocol (IEEE802.3ad), VRRP, power supply
Management	Web interface, SNMP v1/v2/v3, W-NetManager, W-NetExplorer
Diagnosis	IP/MAC conflict detection, LED (power supply, ring and port), RMON, Link Layer Discovery Protocol (LLDP IEEE802.1AB), port mirroring, syslog, virtual cable test (VCT), link check
Setting	Console interface, CLI, Web interface, Telnet, DHCP Option 82, DHCP client, FTP/TFTP
Security	IEEE 802.1X, HTTPS, SSH, SSL, SNMP v3, TACACS+, RADIUS, access control list (ACL)
Multicast	IGMP, IGMP Snooping, GMRP, PIM-SM, PIM-DM, DVMRP Max. IGMP quantity: 256
Routing	RIP v1/v2, OSPF v2, BGP v4, static routing
VLAN	VLAN (IEEE802.1Q), PVLAN, GVRP Max. VLAN quantity: 4093 VLAN ID: 1~4093
Network quality control	QoS(IEEE802.1p/1Q), TOS(Type of sevice)/DiffServ (Differentiated service), port speed limit, broadcast limiter, flow control(IEEE802.3x), SNTP, IEEE1588 v2 Priority queue: 8
Power Supply	
Input voltage	48V DC (36~72 VDC), 220V AC/DC (85~264 VAC / 77~370 VDC)
Connecting terminal	5 pole 5.08mm pitch terminal block
Power consumption	<33.5 W
Protection	Overload voltage protection, reverse polarity protection, redundancy protection

Mechanical Structure	
Housing	Metal, fanless
Protection class	IP40
Mounting	1U 19" rack mounting
Dimensions	482.6mm×44mm×360mm (W×H×D)
Weight	<10 kg
Environment	
Operation temperature	-40˚C to +85˚C
Storage temperature	-40˚C to +85˚C
Humidity	5%~95% (non-condensing)
MTBF	42.4 years
Standard and Approval	
EMI	FCC CFR47 Part 15, CISPR22 (EN55022) class A
EMS	IEC61000-4-2 Electrostatic discharge: ±8kV contact discharge, ±15kV air discharge; IEC61000-4-3 Radiated RFI: 10V/m (80MHz~1GHz); IEC61000-4-4 Fast transient/burst: DC/AC power port: ±4kV; data port: ±2kV; IEC61000-4-5 Surge: DC/AC power port: ±2kV (line-line), ±4kV (line-earth); IEC61000-4-6 Conducted RFI: DC/AC power port: 10V (150 kHz~80MHz); IEC61000-4-8 Power frequency magnetic field: 100A/m (cont.), 1000A/m(1s~3s); IEC61000-4-9 Pulse magnetic field: 1000A/m; IEC61000-4-10 Damped oscillatory: 100A/m; IEC61000-4-12 Oscillatory waves: DC/AC power port: 2.5kV/CM, 1kV/DM
Shock	IEC60068-2-27
Free fall	IEC60068-2-32
Vibration	IEC60068-2-6
General industry	IEC61000-6-2
Railway	EN50155, EN50121-4
Power	IEC61850-3 (pending), IEEE1613 (pending)
EMC	CE, FCC
Safety	UL508 (pending)
Hazardous environment	UL1604 Class 1 Div 2 (pending)
Warranty	
Warranty	5 years

* Rack Switches available early 2013

IEMS3000T Series Gigabit Modular Layer 3 PTP Industrial Ethernet Switch

Dimension Drawing



Ordering Information

Type	Order No.	Description	Slot Qty.		Power supply	Support PTP?	Power consumption
			1 U height	0.5 U height			
IEMS3000T-4G+24-HV	7760048224	Gigabit uplink	1	6	220V AC/DC	Yes	<33.5 W
IEMS3000T-4G+24	7760048225	Gigabit uplink	1	6	48V DC	Yes	<33.5 W
IEMS3000T-28G-HV	7760048226	Full gigabit	1	6	220V AC/DC	Yes	<33.5 W
IEMS3000T-28G	7760048227	Full gigabit	1	6	48V DC	Yes	<33.5 W
Dust Cap RJ45							
IE-DPC	8813490000						

Modules

Type	Order No.	Description	Gigabit Ethernet port Qty.		Fast Ethernet port Qty.		Applicable types
			1000BaseT	SFP	100BaseT(X)	100BaseFX	
RM-4G	7760048260	Data module 0.5 U height	4	-	-	-	Full gigabit
RM-4SFP	7760048261	Data module 0.5 U height	-	4	-	-	Full gigabit
RM-2G/2SFP	7760048262	Data module 0.5 U height	2	2	-	-	Full gigabit
RM-2SC/2SFP	7760048263	Data module 0.5 U height	-	2	-	2 SC	Full gigabit
RM-2SCS/2SFP	7760048264	Data module 0.5 U height	-	2	-	2 SCS	Full gigabit
RM-2ST/2SFP	7760048265	Data module 0.5 U height	-	2	-	2 ST	Full gigabit
RM-2STS/2SFP	7760048266	Data module 0.5 U height	-	2	-	2 STS	Full gigabit
RM-4T	7760048267	Data module 0.5 U height	-	-	4	-	All types
RM-4SC	7760048268	Data module 0.5 U height	-	-	-	4 SC	All types
RM-4SCS	7760048269	Data module 0.5 U height	-	-	-	4 SCS	All types
RM-4ST	7760048270	Data module 0.5 U height	-	-	-	4 ST	All types
RM-4STS	7760048271	Data module 0.5 U height	-	-	-	4 STS	All types
RM-2T/2SC	7760048272	Data module 0.5 U height	-	-	2	2 SC	All types
RM-2T/2SCS	7760048273	Data module 0.5 U height	-	-	2	2 SCS	All types
RM2-4G	7760048279	Data module 1 U height	4	-	-	-	All types
RM2-4SFP	7760048280	Data module 1 U height	-	4	-	-	All types
RM2-2G/2SFP	7760048281	Data module 1 U height	2	2	-	-	All types

* Please see below for SFP transceivers.

SFP transceiver

Type	Order No.	Description
IE-SFP-1G-850-MM	7760048150	Gigabit Ethernet, LC-Connector, distance 550 m multi-mode
IE-SFP-1G-1310-SM10	7760048152	Gigabit Ethernet, LC-Connector, distance 10 km, single-mode
IE-SFP-1G-1550-SM40	7760048155	Gigabit Ethernet, LC-Connector, distance 40 km, single-mode
IE-SFP-1G-1550-SM60	7760048156	Gigabit Ethernet, LC-Connector, distance 60 km, single-mode
IE-SFP-1G-1550-SM80	7760048157	Gigabit Ethernet, LC-Connector, distance 80 km, single-mode
IE-SFP-1G-RJ45-100	7760048158	Gigabit Ethernet, 10/100/1000M auto negotiate RJ45 100m
IE-SFP-F-1310-MM2	7760048159	Fast Ethernet, LC-Connector, distance 2 km, multi-mode
IE-SFP-F-1310-SM10	7760048160	Fast Ethernet, LC-Connector, distance 10 km, single mode

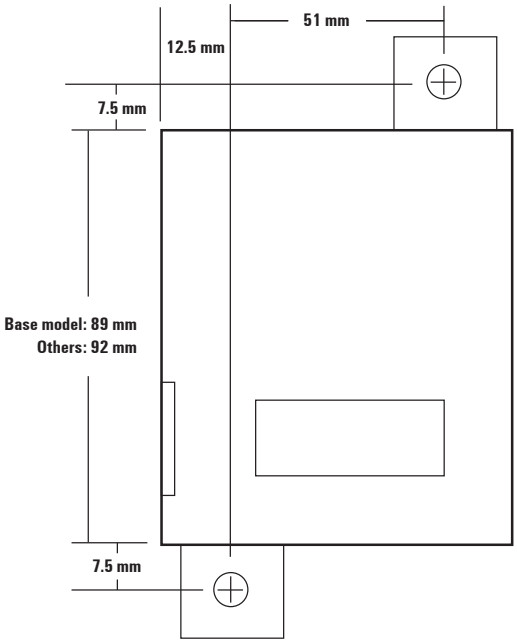
PoE Switch

- Metal, fanless
- Operation temperature: -40 °C to +75 °C
- 802.3af compliant
- Input voltage: 46 to 60Vdc
- DIN-Rail mounting

Technical Data

Interface	
Ethernet port	IEEE 802.3af (PoE), IEEE 802.3, IEEE 802.3u, IEEE 802.1p, 100BASE-TX, 10BASE-T
Power Output	15.4W per port
Data rate	Autonegotiated 10/100Mb, FDX and HDX on all ports
Connectors	RJ45 with autocross
Range	100m
Power Supply	
Supply voltage	46 to 60Vdc
Type	Auxiliary powered
Power Consumption	66W max @ 48Vdc
Connectors	Screw type connectors
Mechanical Structure	
Type	Steel housing
Dimensions	4 port: 89mm x 76mm x 25mm (H x W x D) 6-port: 92mm x 76mm x 43mm (H x W x D)
Weight	0.3kg
Mounting	Case used as heat sink
Cooling	IP40
Environment	
Operation temperature	-40 °C to +75 °C
Storage temperature	-40 °C to +85 °C
Relative Humidity	5% ~ 95% (non-condensing)
Altitude	-60 to 15,000 m
Standard and Approval	
General industry	IEEE 802.3af Compliant PoE Switches
Warranty	
Warranty	5 years

Dimension Drawing



Ordering Data

Type	Order No.	Port Qty.	PoE Port	10/100 Base T(X)	100Base FX Multimode SC	100Base FX Singlemode SC	Power Consumption (W)	Dimension (mm) H x W x D	Weight
PL - 4P	**7940034441**	4	4				66	89x76x25	0.3 kg
PL - 4P - 2RJ	**7940034442**	6	4	2			66	92x76x43	0.3 kg
PL - 4P - 2MSC	**7940034443**	6	4		2		66	92x76x44	0.3 kg
PL - 4P - 2SSC	**7940034444**	6	4			2	66	92x76x45	0.3 kg

* Order separately accessory DIN Rail Mounting Bracket 7940034468 PL-DIN

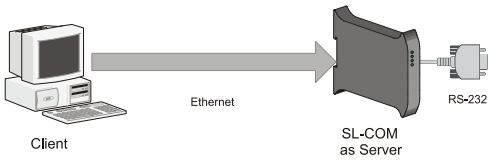
SL-COM 1/ SL-COM 2

- Single or Dual port serial to Ethernet conversion
- Supports RS232/RS485 and Ethernet Communication
- Serial Communication to 115.2kb/s
- Supports TCP Client Server or UDP tunnelling modes

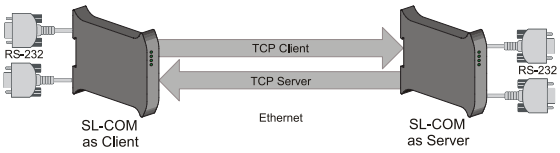
Technical Data

Interface	
Fast Ethernet port	10Mb/s, Half duplex, RJ45 connector
Protocols	Server, Client, UDP Tunnel
	Twisted pair 100 m (standard CAT5, CAT5e LAN cable)
RS485/ 422 port	6way 3.81mm terminal block
	max 1200m, non isolated
RS232 Port	SL COM-1 - 1 x D9 male connectors
	SL COM-2 - 2 x D9 male connectors
	15m maximum,. Non isolated
Status indication	Power LED: PWR Ethernet LED: Ethernet Link
	Status LED: Serial Port connection status
Functional Characteristics	
Network structure	Star, line
Diagnosis	LED (power supply and ports)
Power Supply	
Input voltage	24V DC (10-30VDC)
Connecting terminal	2 pole 3.81 mm pitch terminal block
Power consumption	750m W
Protection	Overload voltage protection
Mechanical Structure	
Housing	Plastic PC/ABS blend
Protection class	IP20
Mounting	TS 35 DIN-Rail
Dimensions	SL1/SL2 22.5mm×110mm× 120mm (W×H×D)
Total ports	SL-COM-1 - 1x RJ45 / RS485/ RS232 6 way terminal block
	1x RS232 full handshake
	SL-COM-2 - 1 x RJ45 / 1 x RS485/422 6 way terminal block
	1x RS232 full handshake, 1 x RS232 software handshake
Weight	120 grams
Environment	
Operation temperature	0˚C to 60˚C
Storage temperature	-25˚C to +85˚C
Humidity	10%~95% (non-condensing)
Standard and Approval	
EMI	AS/NZS CISPR 22/EN 55022 (Class A)
Immunity	EN 55024
Electrostatic Discharge	EN 61000-4-2
Radiated RF	EN 61000-4-3
Fast Transients	EN 61000-4-4
Conducted RF	EN 61000-4-6
Warranty	
Warranty 2 years	

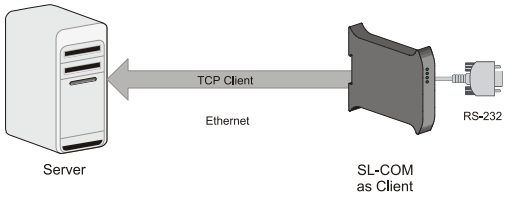
Dimension Drawing



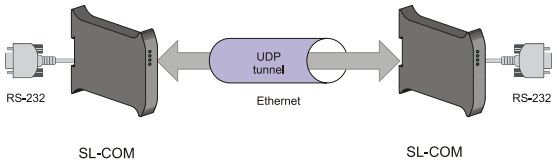
SL-COM-1 in TCP Server mode configuration accepting connections from a PC



Two SL-COM-2 in Client/Server mode configuration



SL-COM-1 in TCP Client mode configuration connecting to a server



Two SL-COM-1 in UDP Tunnel mode configuration

Ordering Data

Type	Order No.	Description	RJ45 10/100	RS232	485/422 Port	Power Consumption (W)	Dimension (mm) H x W x D	Weight
Serial Device Servers								
SL-COM-1	**7940086483**	Single serial port	1	1	1	750m W	101 x 22.5 x 120 mm	0.12 kg
SL-COM-2	**7940086484**	Dual serial port	1	2	1	750m W	101 x 22.5 x 120 mm	0.12 kg

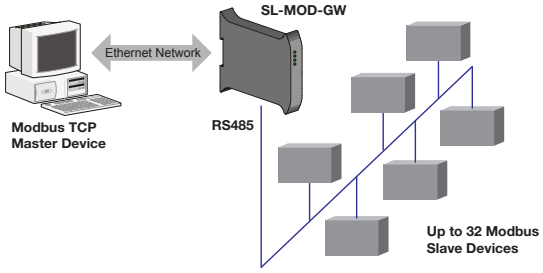
SL-MOD-GW

- Transparent conversion from Modus serial to Modbus TCP
- Supports RS232, RS422, or/RS485
- Serial communications to 115.2kb/s
- Supports Serial or TCP master

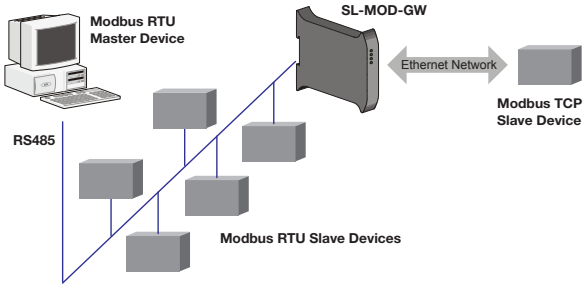
Technical Data

Interface	
Fast Ethernet port	10Mb/s, Half duplex, RJ45 connector
Protocols	Server, Client, UDP Tunnel
	Twisted pair 100 m (standard CAT5, CAT5e LAN cable)
RS485/ 422 port	6way 3.81mm terminal block
	max 1200m, non isolated
RS232 Port	1 x D9 male connector, 15m maximum,. Non isolated
Status indication	Power LED: PWR Ethernet LED: Ethernet Link
	Status LED: Serial Port connection status
Functional Characteristics	
Network structure	Star, line
Diagnosis	LED (power supply and ports)
Power Supply	
Input voltage	24V DC (10-30VDC)
Connecting terminal	2 pole 3.81 mm pitch terminal block
Power consumption	750m W
Protection	Overload voltage protection
Mechanical Structure	
Housing	Plastic PC/ABS blend
Protection class	IP20
Mounting	TS 35 DIN-Rail
Dimensions	22.5mm×110mm× 120mm (W×H×D)
Total ports	1x RJ45 / RS485/ RS2326 way terminal block
	1x RS232 RS232 software handshake
Weight	120 grams
Environment	
Operation temperature	0˚C to 60˚C
Storage temperature	-25˚C to +85˚C
Humidity	10%~95% (non-condensing)
Standard and Approval	
EMI	AS/NZS CISPR 22/EN 55022 (Class A)
Immunity	EN 55024
Electrostatic Discharge	EN 61000-4-2
Radiated RF	EN 61000-4-3
Fast Transients	EN 61000-4-4
Conducted RF	EN 61000-4-6
Warranty	
Warranty 2 years	
Compliance	
Australia	C-Tick
Europe	CE, RoHS
USA	FCC Part 15 (Class A)
Canada	IECES003 (Class A)

Dimension Drawing



SL-MOD-GW connecting Modbus TCP Master to RS485 Modbus RTU Slave Network



SL-MOD-GW connecting Modbus TCP Slave to RS485 Modbus RTU Network

Ordering Data

Type	Order No.	Description	RJ45 10/100	RS232	485/422 Port	Power Consumption (W)	Dimension (mm) H x W x D	Weight
Modbus Gateways								
SL-MOD-GW	**7940086485**	Single serial port	1	1	1	750m W	101 x 22.5 x 120 mm	0.12 kg

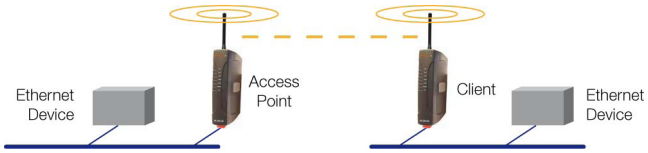
WL-EM 900MHz FHSS Radio

- 20km line of site communications
- Supports RS232/RS485 and Ethernet communications
- Up to 11Mb/s Wireless data
- Serial communications to 115.2kb/s
- Supports Modbus and TCP/serial RTU conversion
- 128 bit AES (WPA2) Encryption & WEP security

Technical Data

Ethernet Connections	
Network Standards	IEEE 802.3 Compliant, 10/100BASE-T, IEEE 802.1d (STP) Bridge/Router functions work with all Ethernet Protocols
Embedded Protocols	TCP/IP, UDP, ARP, PPP, ICMP, HTTP, FTP, TFTP, TELNET
Data rate	Autonegotiated10/100Mb, FDX and HDX
Connectors	RJ45
Range	100m
Serial Ports	
Type	1 x RS232 and 1 x RS485
Baud rate	1.2 to 115.2Kb/s
Parity / Stop bits / Flow control	Fully configurable 6-port: 92mm x 76mm x 43mm (H x W x D)
LED Indication	
Indicators	Power, Radio Rx/Tx/Link, LAN Link, Serial
Power Supply	
Type	Auxiliary powered
Supply voltage	10 to 30Vdc
Connectors	Screw type connectors
Protection	Overvoltage and reverse polarity protected
General	
Storage temperature	-40 to +85 °C
Operating temperature	-40 to +60 °C
Relative humidity	5% to 95% (non-condensing)
Housing	
Type	High impact ABS
Dimensions	160mm x 40mm x 135mm (H x W x D)
Mounting	DIN Rail Mount
Weight	0.4kg

Application Drawing



Ordering Data

Type	Order No.	RJ45 10/100	Ports RS232	RS485/422	Dimension (mm) H x W x D	Weight
WL-EM-900	7940033934	1	1	1	160 x 40 x 135	0.4 kg

* 900MHZ models not available for use in New Zealand

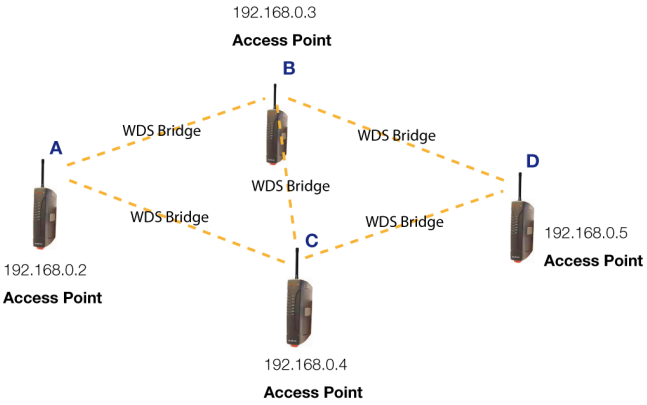
WL-EM 2.4GHz FHSS Radio and WL-EM 5.8GHz FHSS Radio

- 5km line of site communications
- Supports RS232/RS485 and Ethernet communications
- 54Mb/s Wireless data (up to 108Mbits/sec with Turbo boost feature)
- Serial communications to 115.2kb/s
- Supports Modbus and TCP/serial RTU conversion
- 128 bit AES (WPA2) Encryption & WEP security
- Redundancy mesh network topology configuration

Technical Data

Ethernet Connections	
Network Standards	IEEE 802.3 Compliant, 10/100BASE-T, IEEE 802.1d (STP) Bridge/Router functions work with all Ethernet Protocols
Embedded Protocols	TCP/IP, UDP, ARP, PPP, ICMP, HTTP, FTP, TFTP, TELNET
Data rate	Autonegotiated10/100Mb, FDX and HDX
Connectors	RJ45
Range	100m
Serial Ports	
Type	1 x RS232 and 1 x RS485
Baud rate	1.2 to 115.2Kb/s
Parity / Stop bits / Flow control	Fully configurable 6-port: 92mm x 76mm x 43mm (H x W x D)
LED Indication	
Indicators	Power, Radio Rx/Tx/Link, LAN Link, Serial
Power Supply	
Type	Auxiliary powered
Supply voltage	10 to 30Vdc
Connectors	Screw type connectors
Protection	Overvoltage and reverse polarity protected
General	
Storage temperature	-40 to +85 °C
Operating temperature	-40 to +60 °C
Relative humidity	5% to 95% (non-condensing)
Housing	
Type	High impact ABS
Dimensions	160mm x 40mm x 135mm (H x W x D)
Mounting	DIN Rail Mount
Weight	0.4kg

Application Drawing



Ordering Data

Type	Order No.	RJ45 10/100	Ports RS232	RS485/422	Dimension (mm) H x W x D	Weight
WL-EM-240G	**7940085864**	1	1	1	160 x 40 x 135	0.4 kg
WL-EM-580(New Zealand Only)	**7940085865**	1	1	1	160 x 40 x 135	0.4 kg

Wireless Expansion I/O Modules

The WL-IO Series expansion modules take advantage of the powerful Modbus capabilities of Weidmuller's 2.4GHz and 900 MHz Ethernet modems, enabling extensive wireless I/O networks to be built-up quickly and efficiently. A range of modules are available with up to 16 I/O channels , encompassing both analogue and digital inputs and outputs.In addition, the WL-IO-xx modules can be used independently of the Wireless Modems, as a standalone Modbus remote I/O solution for hardwired RS485 applications.

- Expansion I/O for WL-EM Wireless Ethernet Modems
- Up to 16 Selectable I/O Per Module
- Up to 31 Units can be connected to modem RS485 Port
- Selectable Communications via Modbus RTU or ASCII Protocol
- Three I/O Versions available
- Easy to use windows configuration software
- Serial Port configurable up to 115.2kbp/s
- -40°C to +60°C Operating Temperature
- DIN Rail Mounting
- Digital inputs & outputscan be configured as discrete or pulse
- Analogue inputs can be 4 Floating or 8 Commoned
- Peer to Peer mode mapping of DI to DO & AI to AO
- Modules can be used stand-alone as conventional Modbus slaves to any Modbus master.

Ordering Data

Type	WL-IO-DIO	WL-IO-DAI	WL-IO-DAO
Digital Inputs	Up to 16	Up to 8 voltage-free contacts	Up to 8
Digital Outputs	Up to 16	Up to 8 FET	Up to 8
Analog Inputs	0	4 "floating" / 8 commoned 0-20mA / 0-10V	0
Analog Outputs	0	0	8 Sink / Source 0-20mA / 0-10V
Pulse Inputs	4 1Khz	0	0
Pulse Outputs	815Khz	8 15Khz	8 15Khz
Order No.	**7940033937**	**7940033940**	**7940033941**

Wireless I/O Modules

Wireless I/O connects to analogue, discrete and pulse transducer signals These signals are transmitted by licence-free 900MHz radio and re-created as output signals, providing a simple, cost effective alternative to hardwired point to-point I/O. In addition, Weidmuller's Wireless I/O units have the ability to form sophisticated point to multi-point, or multi-point to multi-point I/O networks providing a flexible and cost effective solution for difficult to wire applications.

- 900MHz FHSS Operation
- Typical line-of-sight range 3-20km
- Licence Free Operation
- Full data encryption over radio link
- DIN Rail Mount Housing
- -40°C to +60°C Operating Temperature

WL-TX-900

Technical Data

Type	WL-TX-900	WL-RX-900
Digital Inputs	2 x Pulse or Status	-
Digital Outputs	1 x Local Set point 1 x Status	3 x N/O Relay Contact
Analog Inputs	1 x 0-20 (4-20mA) 1 x Thermocouple	1 x 0-20 (4-20mA)
Virtual Analogue Inputs	Battery Voltage Internal Temperature	-

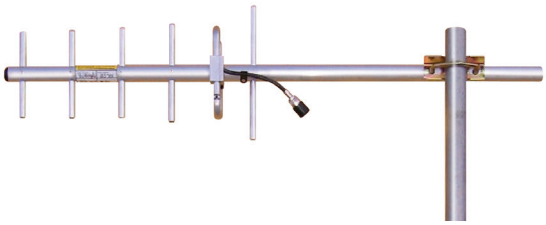
* Note: Digital inputs can be either Pulse or Contact input.

Ordering Data

Type	Description	Order No.
WL-TX-900	Transmiter Module (Australia Only)	**7940033933**
WL-RX-900	Receiver Module (Australia Only)	**7940033936**
WL-TXRX-900	Matched Pair (Australia Only)	**7940033935**

* 900MHZ models not available for use in New Zealand

Antenna Accessories



900MHz Antennas	Description	Gain	Order No.
WL-WH-900-SMA	Demo whip (90mm long) with SMA-Male connector (for internal use only)	0dBi	**7940033944**
WL-DG900-1	Whip (150mm long) with 1m RG174 lead, SMA male connector, stud mount and R/A bracket	0dBi	**7940033945**
WL-DG900-5	Whip (150mm long) with 5m RG174 lead, SMA male connector, stud mount and R/A bracket	-2dBi	**7940033946**
WL-CFD890EL	Dipole (400mm long) with 5m RG58 lead, SMA male connector and mounting bracket	2.15dBi	**7940033947**
WL-SG900EL	Collinear (800m long)with 'N' Type Female connector and mounting bracket	5dBi	**7940033948**
WL-SG900-6	Collinear (1370mm long) with 'N' Type Female connector	8dBi	**7940033949**
WL-YU6-900	6 element Yagi with 'N' type Female connector	10dBi	**7940033950**
WL-YU16-900	16 element Yagi with 'N' Type Female connector	15dBi	**7940033951**
2.4GHz Antennas	**Description**	**Gain**	**Order No.**
WL-WH2400-SMA	Demo Whip with SMA Male Connector	0dBi	**7940033952**
WL-MD2400-EL	Dipole (230mm long) with 5m RG58 Cellfoil lead, SMA connector and stud mounting bracket	3dBi	**7940033953**
WL-SG2400-EL	Collinear (510mm long) with 'N' Type Female connector and mounting bracket	5.1dBi	**7940033954**
WL-Z2400-EL	Collinear (850mm long) with Black Radome and N-type Female connector	10dBi	**7940033955**
WL-Y2400-18EL	18 Element Yagi with Black Radome and 'N' Type Female connector	18dBi	**7940033956**
Surge Diverter	**Description**	**Gain**	**Order No.**
WL-CSD-SMA-2500	SMA surge diverter - SMA Male to SMA Female	<0.2dB	**7940035161**
WI-CSD-N-2500	Bulkhead fitting surge diverter N-Type Male to N-Type Female	<0.15dB	**8947830000**
Cables	**Description**	**Loss**	**Order No.**
WL-ETH-C5A	Ethernet Cable - direct-RJ45 to RJ45 2 Metre	N/A	**7940033957**
WL-SER-RJ45	RS-232 Cable DB9 Female to RJ45 for programming WL-TX-900 & WL-RX-900	N/A	**7940033958**
WL-SER-DB9	RS232 Serial cable DB9 male to DB9 female	N/A	**7940033959**
WL-CC3-SMA	Coax Cable Kit, 3m long, Cellfoil, 'N' Type Male to SMA Male	2dB@2.4Ghz, 1dB@900Mhz	**7940033962**
WL-CC10-SMA	Coax Cable Kit, 10m long, Cellfoil,'N' Type Male to SMA Male	6dB@2.4Ghz, 3dB@900Mhz	**7940033960**
WL-CC20-SMA	Coax Cable Kit, 20m long, Cellfoil,'N' Type Male to SMA Male	12dB@2.4Ghz, 6dB@900Mhz	**7940033961**
Antenna Brackets	**Description**		**Order No.**
WL-BR-COL-KIT	Mounting Bracket Kit for Collinear Antenna		**7940033942**
WL-BR-YAG-KIT	Mounting Bracket Kit for Yagi Antenna		**7940033943**
Power Supplies	**Description**		**Order No.**
CP SNT 48W 24V 2A	Connect Power 24V 2A DIN rail mount power supply		**8739140000**
	PRO-M 24V 3A DIN rail mount power supply		**8951330000**